October 13, 1945

Railway Age

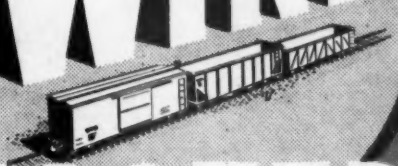
Founded in 1856

THE LIBRARY OF CONGRESS SERIAL RECORD
OCT 23 1945
Sec. 31

UNIFORM HOPPER DOOR ADJUSTMENT

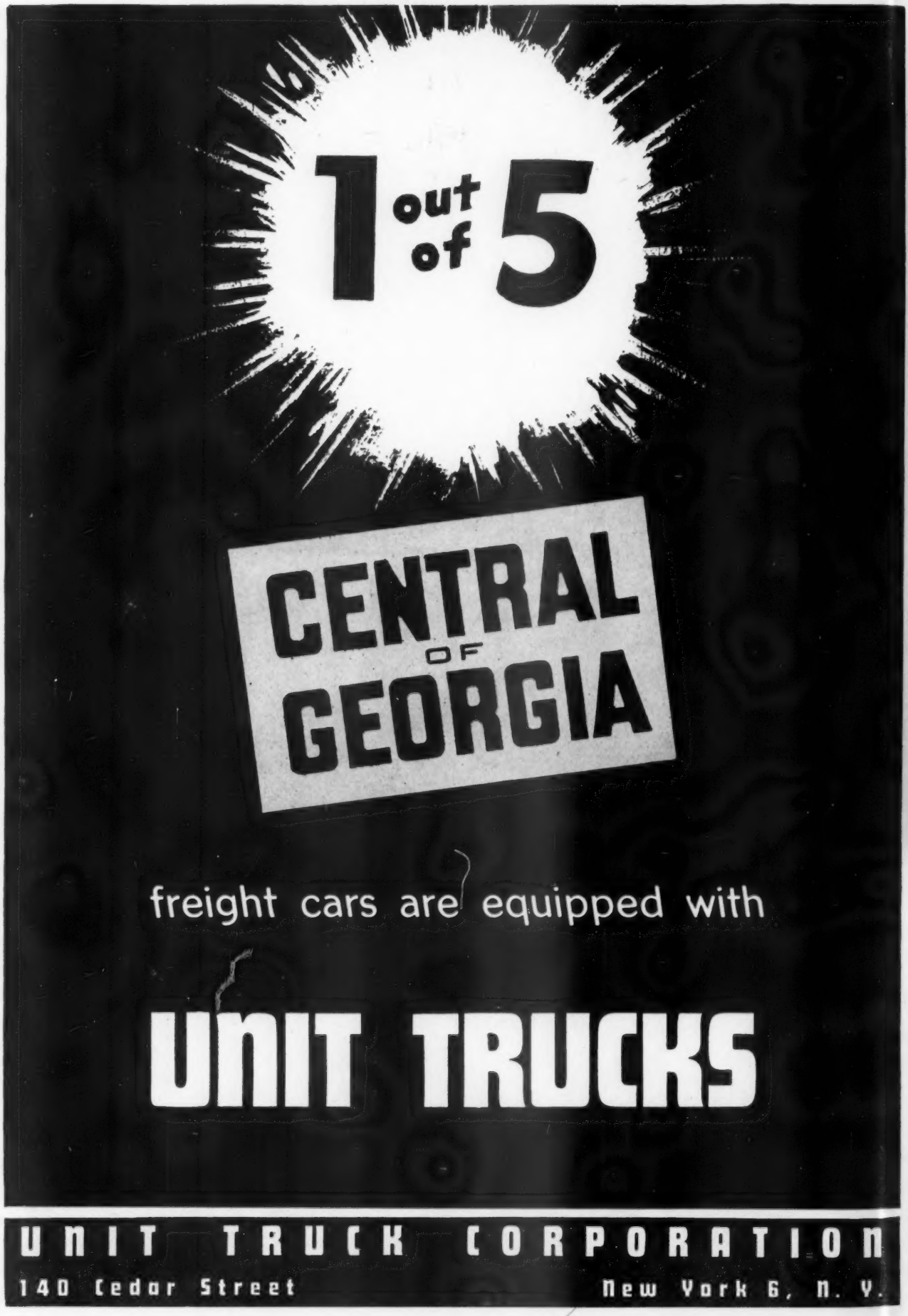


WINE

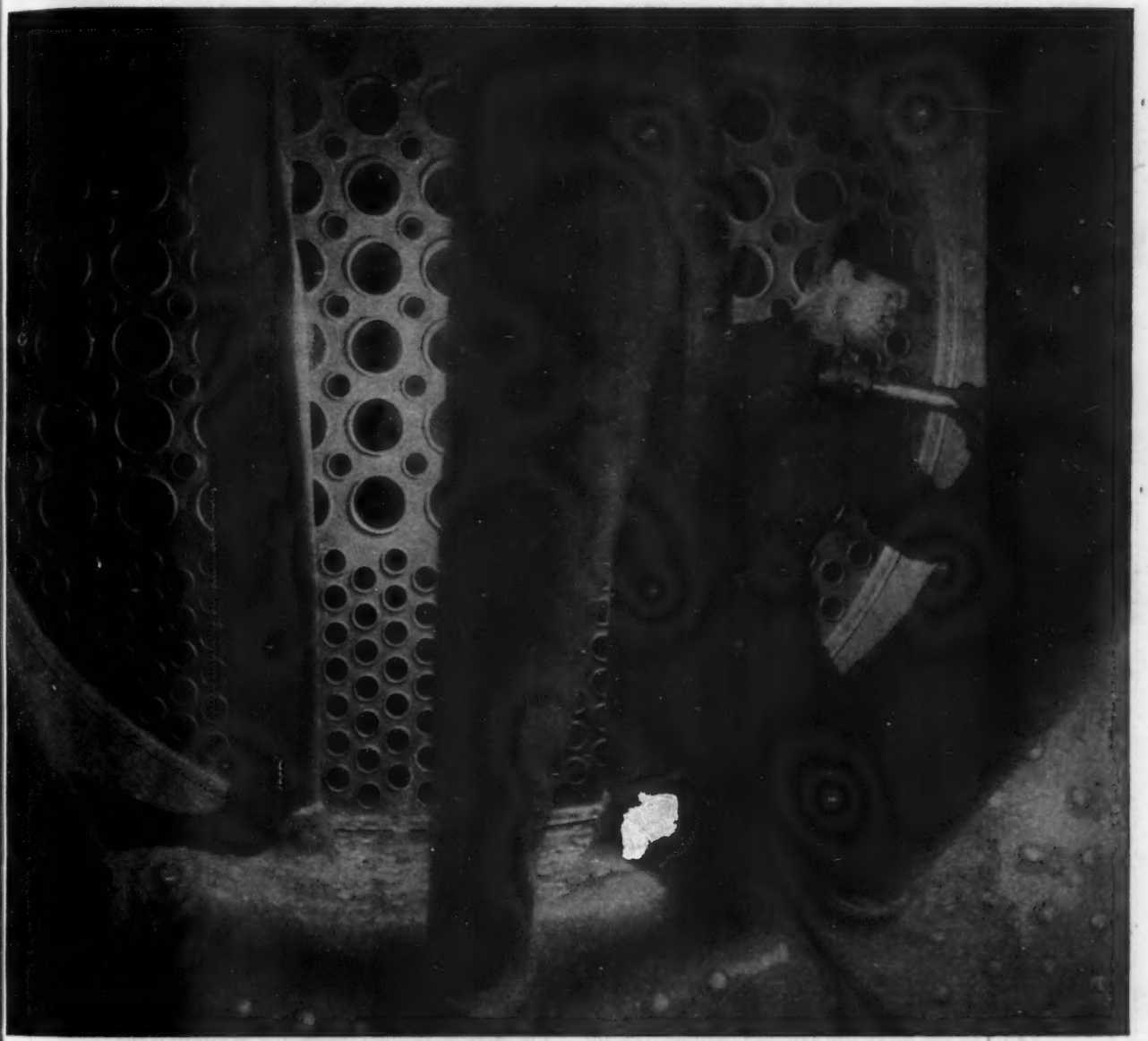


MASTER DOOR LOCKS

THE WINE RAILWAY APPLIANCE CO. TOLEDO 9, OHIO



Published weekly by Simmons-Boardman Publishing Corporation, 1309 Noble Street, Philadelphia, Pa. Entered as second class matter, January 4, 1933, at the Post Office at Philadelphia, Pa., under the act of March 3, 1879. Subscription price $6.00 for one year U. S. and Canada. Single copies, 25 cents each. Vol. 119, No. 15.



Firebox Steel that can take it!

Want to snap your fingers at premature firebox trouble? Install Bethloc Firebox Plates in your heavy-duty locomotives.

Bethloc Firebox Plates can take all the punishment that today's gruelling schedules have to offer because they're made from a special low-carbon steel which resists the severe stresses caused by sudden temperature changes and vibration. Their toughness, ductility and uniform grain structure make them ideal for main-line service. Bethloc Firebox Plates are but little affected by aging, and they fully meet railroad requirements for strength, elasticity and elongation.

You'll find Bethloc Firebox Plates in use today in locomotives on more than forty American railroads—and giving a good account of themselves, too.

Bethloc BETHLEHEM STEEL

FIREBOX PLATES

Symbols of Transportation Progress on

THE MINNEAPOLIS & ST. LOUIS RAILWAY



Here is some of the newest equipment that the Minneapolis & St. Louis Railway has added to its rolling stock in 1945, in the program of modernization begun ten years ago and constantly going on.

At the head end of the Exhibition Train is one of the three big Diesel Locomotives, of 4,050 horsepower each, built for the M. & St. L. this year. Coupled on are six of the ten Aluminum Box Cars just acquired by the road.

Two of the Diesel Giants, each consisting of three power-units, are in Daily Through Freight Service on the main line between Minneapolis and Peoria. The third will be delivered this fall. Also on order for the M. & St. L. is an auxiliary unit generating 1,350 horsepower. Added to one of the three engines, it will increase the power rating to 5,400.

The gleaming Aluminum Cars, weighing one-sixth less than standard box cars of equal size, are being operated in special test service between the Twin Cities and St. Louis, on the M. & St. L. and connecting Wabash Railroad. These ten aluminum cars are part of a fleet built for midwest roads in 1945, first of the type to ride the rails anywhere.

This most modern of railway equipment is in addition to thirteen new combination road and switching Diesels and 1,000 standard steel box cars of 100,000 pounds capacity that are starting work on the M. & St. L. Five hundred of the cars were delivered a few months ago and the other 500 will be in service by the end of 1945.

Fast Freight Service via The Peoria Gateway

THE MINNEAPOLIS & ST. LOUIS RAILWAY CO. — THE PEORIA GATEWAY

The **MINNEAPOLIS & ST. LOUIS** *Railway*

GENERAL OFFICES, NORTHWESTERN BANK BUILDING, MINNEAPOLIS 2, MINN.

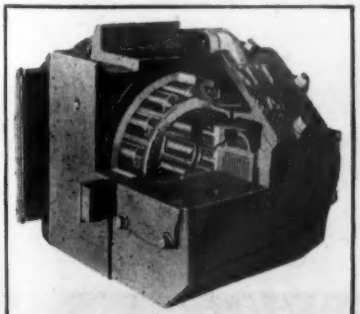


Rollers Roll — ON THE STREAMLINERS TO FLORIDA

On railroads featuring streamline service to Florida, Hyatt Roller Bearing Journal Boxes are used in the cars and Diesel locomotives.

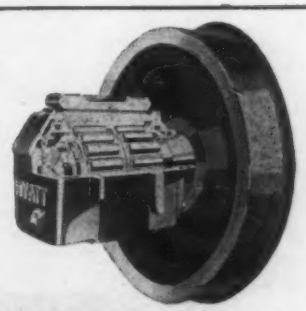
The exclusive design of the Hyatt Journal Boxes, providing smooth-riding comfort—trouble-free, dependable service—high-speed mileage records—low-cost maintenance—ease of repair or replacement is recognized by the operators of these famous trains.

A booklet on Southeastern roads has been prepared—ask for a copy. Hyatt Bearings Division, General Motors Corporation, Harrison, N. J.



Cutaway view of Hyatt Journal Box as used on Modern Electro-Motive Diesel locomotives.

HYATT
ROLLER BEARING RAILROAD JOURNAL BOXES



Hyatt Type J Railroad Journal Box as used in passenger cars shown with section cut away.

They sail around

- - one reason why these 3 ALCO-G.E. diesel-electrics can handle switching more efficiently

"Our present work schedule would require seven steam locomotives like those released. Not only are three Alco-G.E. diesel-electrics handling all the work, but they are doing it at considerably lower cost."

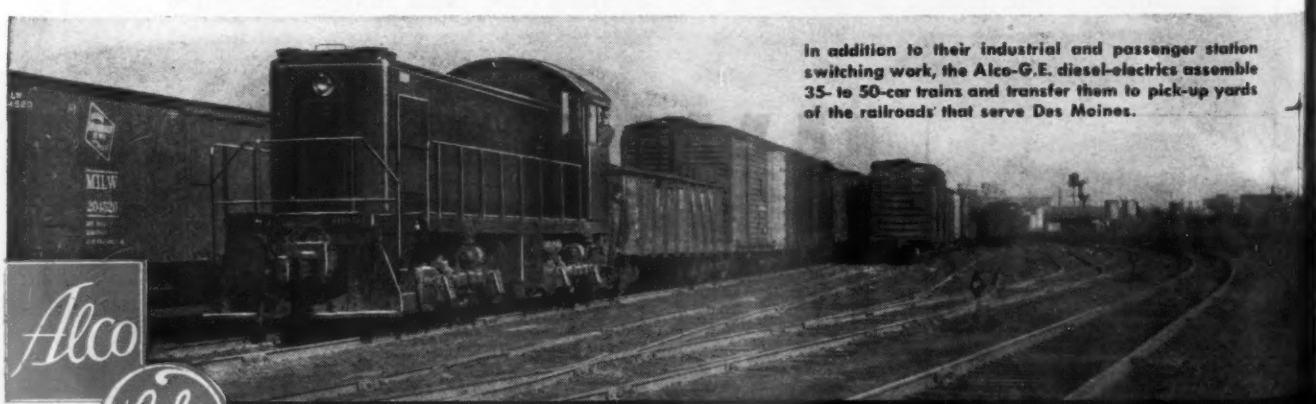
THAT'S how W. A. Hahnen, General Manager of the Des Moines Union Railway, feels about the three Alco-G.E. diesel-electrics that have been working for him since 1940.

Before these three units were put into service, seven steam locomotives were being pushed to operate a shift a day per locomotive, handling an average of 11,000 cars a month. Three diesel-electrics have taken over all that work, which includes the serving of 150 Des Moines industries.

One important advantage the diesel-electrics have over steamers in industrial switching is their ability to go around sharp curves—up to 40 degrees in curvature—without derailing. And because the diesel-electrics present no fire hazard, they can enter buildings safely and go right up to the loading docks.

As in the case of many other users of Alco-G.E. diesel-electrics, the Des Moines Union's savings have been more than enough to pay for these locomotives within five years.

To determine what savings you can make with Alco-G.E. diesel-electrics, ask our engineers to work with your own on a motive-power study. Our recommendations will be impartial, because we build all three types of motive power—diesel-electric, electric, and steam.



In addition to their industrial and passenger station switching work, the Alco-G.E. diesel-electrics assemble 35- to 50-car trains and transfer them to pick-up yards of the railroads that serve Des Moines.

Alco GE

AMERICAN LOCOMOTIVE

35°
October 13, 19

d

el-
ial
rp

el-
ter
ad-

co-
n's
ay

ake
our
ve-
be
of
and

er station
assemble
-ty yards

VE

AY AGE



WHY DIESEL-ELECTRICS DO MORE WORK IN LESS TIME AT LOWER COST

1. Availability averages 90 to 95 per cent, compared with 50 to 65 per cent for steamers because there is no waiting for steaming up or time out for servicing.

2. Faster acceleration in switching movements, because of greater initial tractive effort and less dead weight.

3. Excellent visibility from operator's position, because of low engine hood and absence of tender.

4. Less affected by climatic conditions; low temperatures that adversely effect steaming operations are a benefit to electric equipment.

5. Operating costs are much less than those of steamers, because of high thermal efficiency of the diesel engine, elimination of standby losses and absence of water costs.

6. Track maintenance and wear are reduced because the diesel-electric has a rigid wheelbase that is short, and has no reciprocating drive.

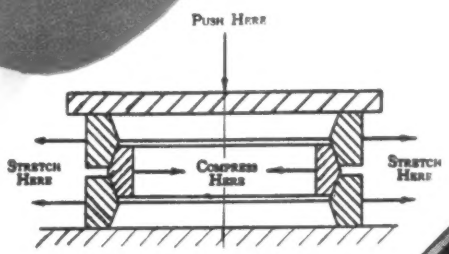
7. Expensive servicing facilities, such as water-treating plants, coal and ash handling equipment, are reduced or entirely eliminated.

8. Electric drive insures a smooth application of power which prevents shock damage to cars and lading.

9. The smoke nuisance is eliminated.

and GENERAL ELECTRIC

Edgew



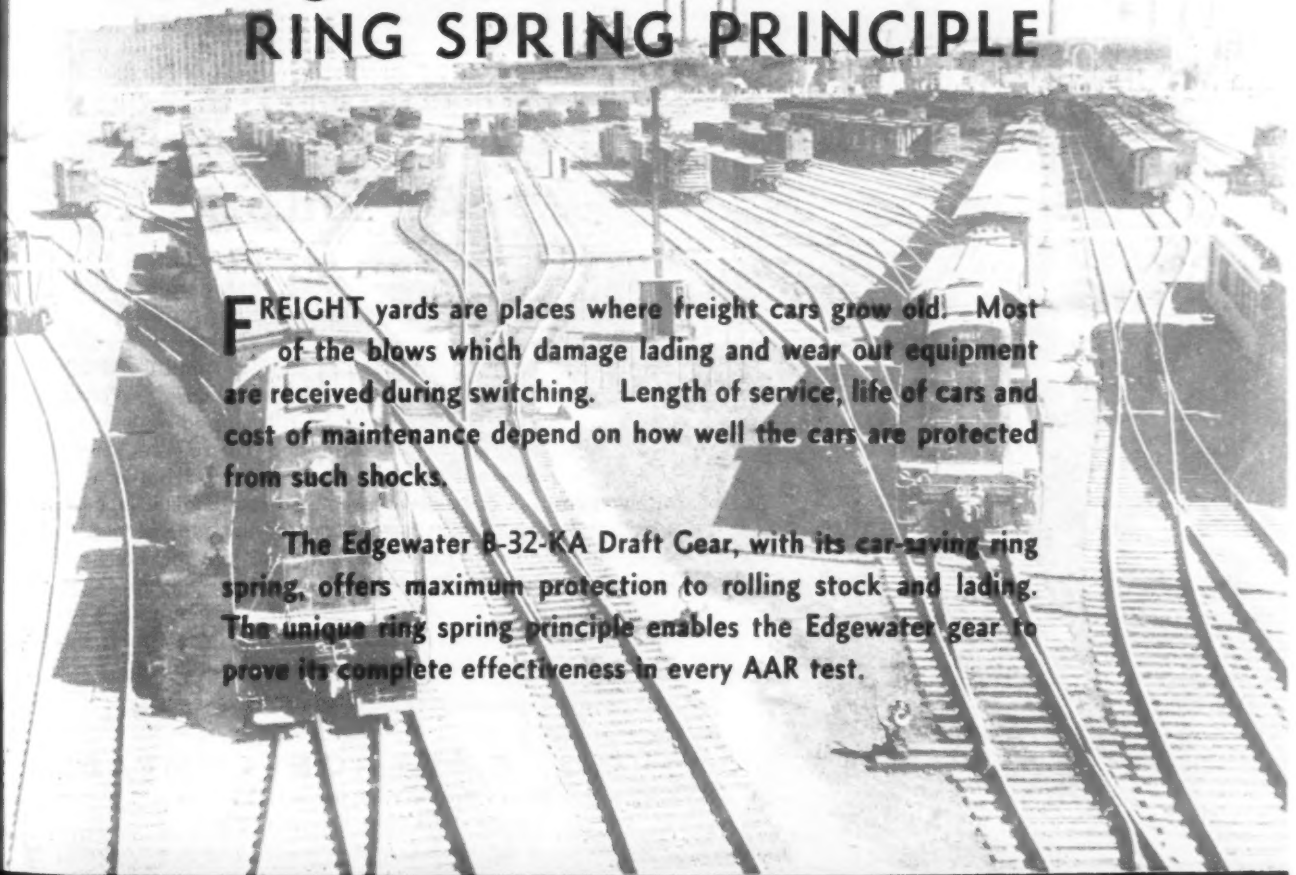
PRINCIPLE OF THE RING SPRING

EDGEWATER STEEL COMPANY · PITTSBURGH, PA.

...ater DRAFT GEARS

HIGHER CAPACITY · LONG LIFE · SMOOTH ACTION
INHERENT STRENGTH · SIMPLICITY · POSITIVE RELEASE

through EDGEWATER'S exclusive RING SPRING PRINCIPLE



FREIGHT yards are places where freight cars grow old. Most of the blows which damage lading and wear out equipment are received during switching. Length of service, life of cars and cost of maintenance depend on how well the cars are protected from such shocks.

The Edgewater B-32-KA Draft Gear, with its car-saving ring spring, offers maximum protection to rolling stock and lading. The unique ring spring principle enables the Edgewater gear to prove its complete effectiveness in every AAR test.

Atlanta, Ga. Baltimore, Md. Boston, Mass. Chicago, Ill. Cleveland, O. Kansas City, Mo. Louisville, Ky. New York, N.Y.
Philadelphia, Penna. St. Louis, Mo. St. Paul, Minn. San Francisco, Calif. Seattle, Wash. Washington, D. C.

COMPLETE *Finishing* SYSTEMS





A typical Mahon Spray painting enclosure, complete with Hydro-Filter Over-Spray Collector Units and Filtered Air Supply System, engineered to meet the specific requirements of the buyer.

...*YES,* for the **RAILROADS** *and* **CAR BUILDERS TOO**

What Mahon has done for the Automotive Industry, Aircraft Industry, and manufacturers of Stoves, Refrigerators, Washing Machines, Radios, and hundreds of other products where spray painting and production finishing is a major item, can also be done in the paint shops of Railroads and Car Manufacturers—for either Passenger or Freight cars. With an up-to-date spray painting enclosure, equipped with Mahon Hydro-Filter over-spray collectors and Filtered Air Supply Units, your shops will turn out more work, and better work, at lower cost . . . completely assembled four engined bombers were painted in Mahon installations of this type during the war. The Mahon organization brings to you the benefit of over twenty years of practical experience in this highly specialized field—a wealth of technical knowledge not available to you elsewhere. You may discuss your paint shop problems with a Mahon engineer without obligation.

Address correspondence to INDUSTRIAL EQUIPMENT DIVISION

THE R. C. MAHON COMPANY

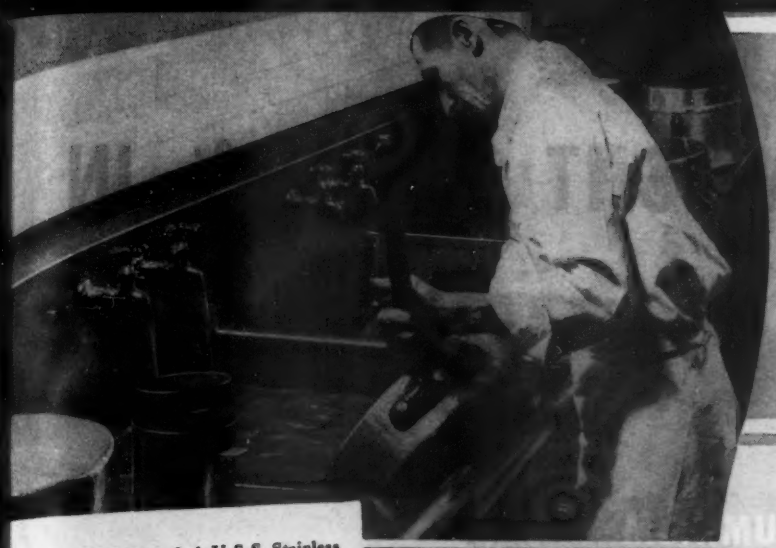
Home Office and Plant, Detroit 11, Michigan

Western Sales Office, Chicago 4, Illinois

Manufacturers of

Metal Cleaning Machines, Rust Proofing Machines, Hydro-Filter Spray Booths, Ovens of All Types, Filtered Air Supply Units, Hydro-Foam Dust Collectors—and Many Other Units of Special Production Equipment—including Complete Finishing Systems.

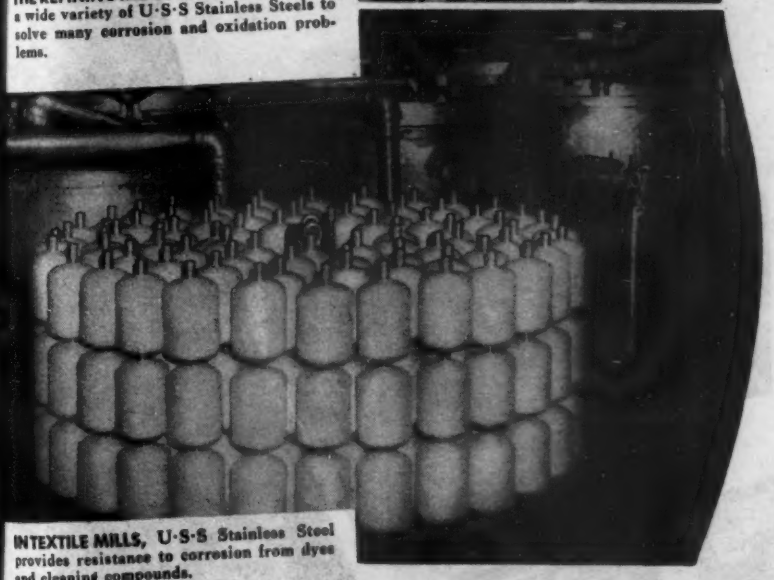
MAHON



FOOD HANDLERS find U·S·S Stainless Steel immune to food stains, rust and tarnish, easy to keep clean.



THE REFINING INDUSTRY may choose from a wide variety of U·S·S Stainless Steels to solve many corrosion and oxidation problems.



IN TEXTILE MILLS, U·S·S Stainless Steel provides resistance to corrosion from dyes and cleaning compounds.

LARGE STOCKS OF *Stainless Steel* AVAILABLE FOR IMMEDIATE SHIPMENT...

Call Us!

CUTBACKS in military demands have permitted us to build up our warehouse stocks of U·S·S Stainless Steel. Sheets, plates, rounds, bars of all kinds, pipe, tubing, angles and welding electrodes in all standard grades and specifications are available for quick delivery.

OUR ENGINEERS WILL HELP YOU!

War production has taught us hundreds of new ways to use Stainless Steel. This increased knowledge is at your service. Our engineers will gladly assist you in selecting the proper types of U·S·S Stainless Steel for your requirements and will help you with fabricating problems. Free technical bulletins will be sent to you upon request.

PHONE, WRITE OR WIRE our nearest warehouse when you need Stainless Steel. A call to us may help you solve a production problem, may speed reconversion to peacetime operations. We are doing our best, under today's conditions, to maintain our reputation for quick service. Your orders and inquiries will receive courteous attention and prompt action.

UNITED STATES STEEL SUPPLY COMPANY — USS STEELS — SERVICE

UNITED STATES STEEL SUPPLY COMPANY

CHICAGO (90)	1319 Wabansia Ave., P. O. Box MM—BRUnswick 2000	CLEVELAND (14)	1394 E. 39th St., HEnderson 5750	PITTSBURGH (12)	1281 Reedsdale St., N. S. CEdar 7780
BALTIMORE (3)	Bush & Wicomico Sts., P. O. Box 2036—GILmore 3100	MILWAUKEE (1)	4027 West Scott St., P. O. Box 2045—Mitchell 7500	ST. LOUIS (3)	21st & Gratiot Sts., P. O. Box 27 MAin 5235
BOSTON	176 Lincoln St., (Allston 34), P. O. Box 42—STAdium 9400	NEWARK (1), N. J.	Foot of Bessemer St., P. O. Box 479—Bigelow 3-5920 REctor 2-6560, BErgen 3-1614	TWIN CITY	2545 University Ave., St. Paul (4), Minn. NEstor 2821

UNITED STATES STEEL

DEADWEIGHT CUT 26% IN



TWENTY-FIVE NEW HOPPER CARS

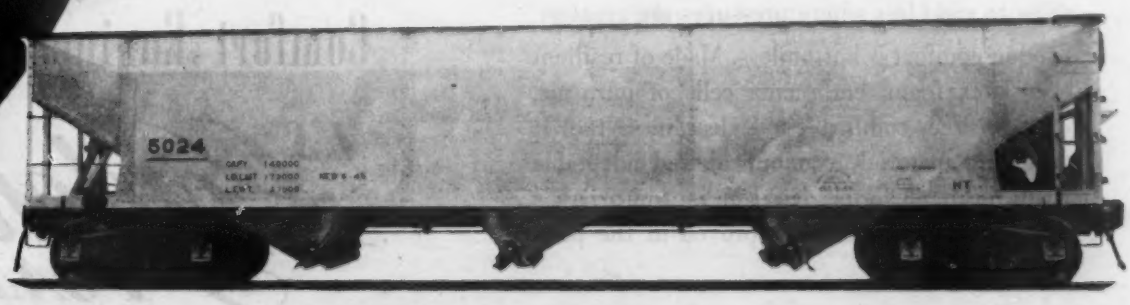
MADE OF

Alcoa Aluminum

Twenty-five 70-ton hopper cars made of Alcoa Aluminum by the American Car and Foundry Company for a leading southwestern railroad are now off the production line. Aluminum alloy is used for the entire body of these cars, except the center sill and bolster, which are made of steel.

Average scale weight, empty, is 37,000 pounds per car, compared with an average of 50,100 pounds for the conventional all-steel 70-ton hopper car—a saving of 26% in deadweight. The aluminum car carries 6½ tons more than the corresponding A.A.R. steel car without imposing any more weight on the axles and without requiring any more locomotive power. Cars are equipped with Type AB Empty and Load Brake.

These aluminum hopper cars were designed to purchaser's specifications by American Car and Foundry Company and Alcoa engineers. ALUMINUM COMPANY OF AMERICA, 2178 Gulf Building, Pittsburgh 19, Pennsylvania.



ALCOA ALUMINUM

ALCOA ALUMINUM



HOW THE FUTURE FEELS!

Just push a button in Budd's new stainless steel Cabin Car and the bed is ready for night occupancy. And comfort such as Koylon provides, completes the picture.

Railroad passengers had felt it before the war—the future comfort of "U. S." Koylon Foam. And soon, Koylon will be Comfort Engineered in any desired degree of lightness, depth and density—so as to yield less where pressures are greatest.

Koylon comfort is bottomless. Made of resilient rubber latex foam, embracing cells of pure air, Koylon *breathes* comfort—and cleanliness too. It is a lasting material, economical and adaptable to illimitable designs. Koylon is tomorrow's cushioning material, already proved in the past.

Comfort Engineered

"U.S." Koylon FOAM

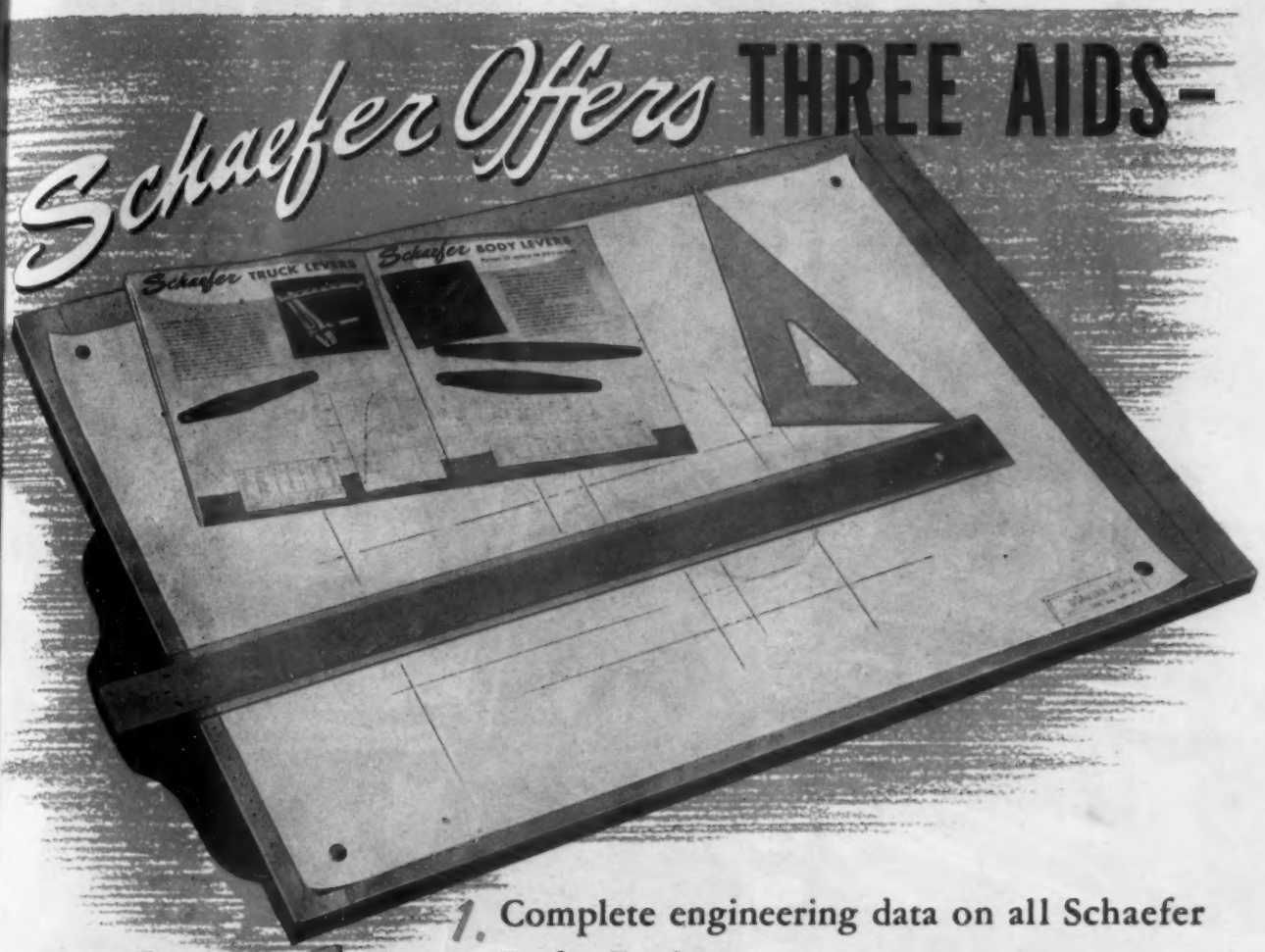
REG. U.S. PAT. OFF.

Serving Through Science

UNITED STATES RUBBER COMPANY

"U.S." KOYLON FOAM DIVISION · MISHAWAKA, INDIANA

Schaefer Offers THREE AIDS—



1. Complete engineering data on all Schaefer Brake Equipment.

2. Engineering service to help you use Schaefer Equipment in your own brake designs.

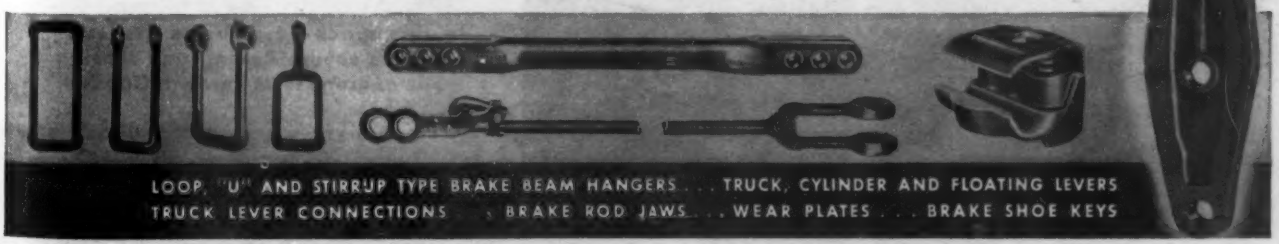
3. A comprehensive catalog of all Schaefer Equipment to assist Purchasing, Engineering, Stores and Repair Departments.



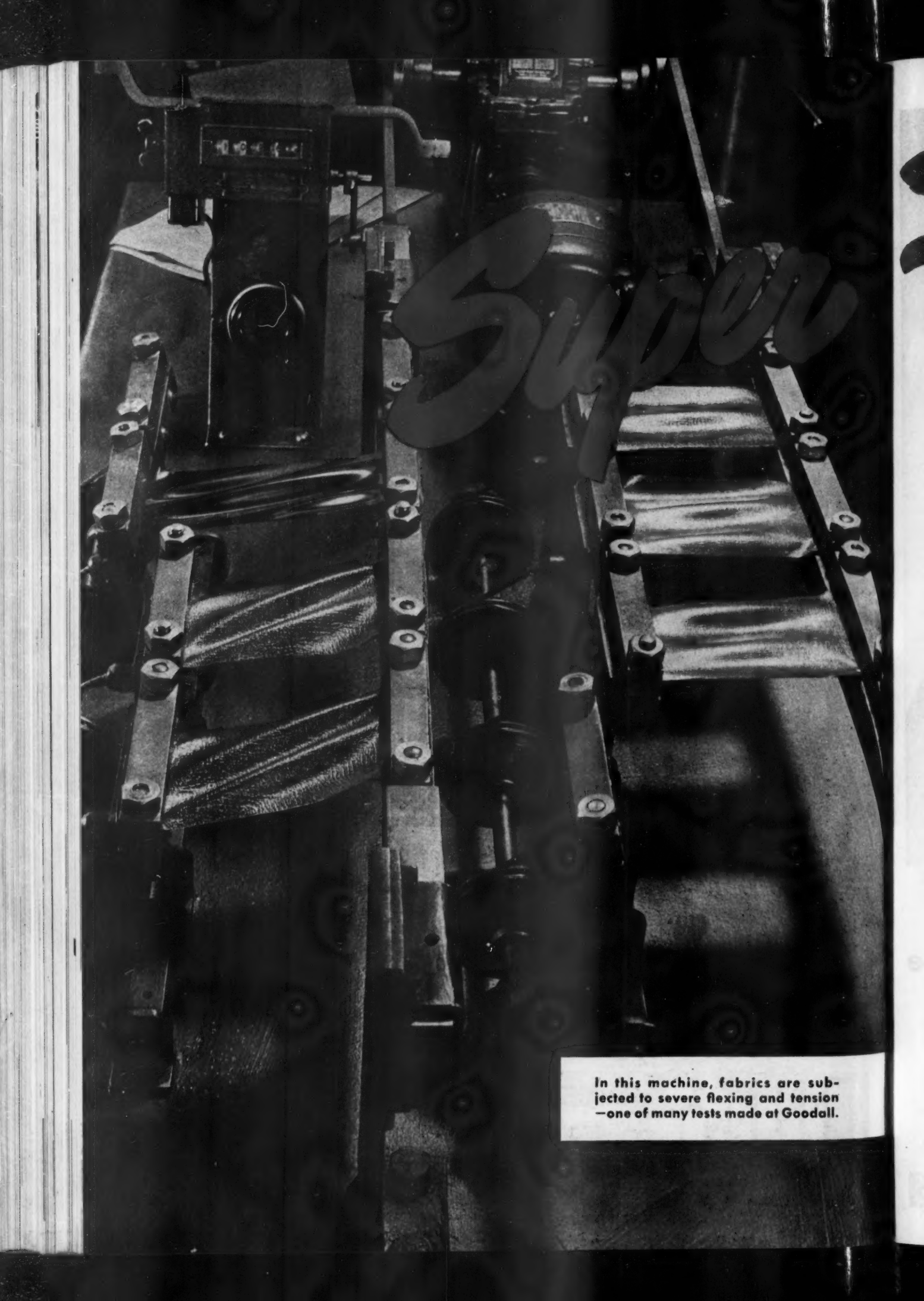
Send today for your copy

Schaefer EQUIPMENT COMPANY

KOPPERS BUILDING PITTSBURGH, PA.



LOOP, "U" AND STIRRUP TYPE BRAKE BEAM HANGERS . . . TRUCK, CYLINDER AND FLOATING LEVERS
TRUCK LEVER CONNECTIONS . . . BRAKE ROD JAWS . . . WEAR PLATES . . . BRAKE SHOE KEYS



In this machine, fabrics are subjected to severe flexing and tension—one of many tests made at Goodall.

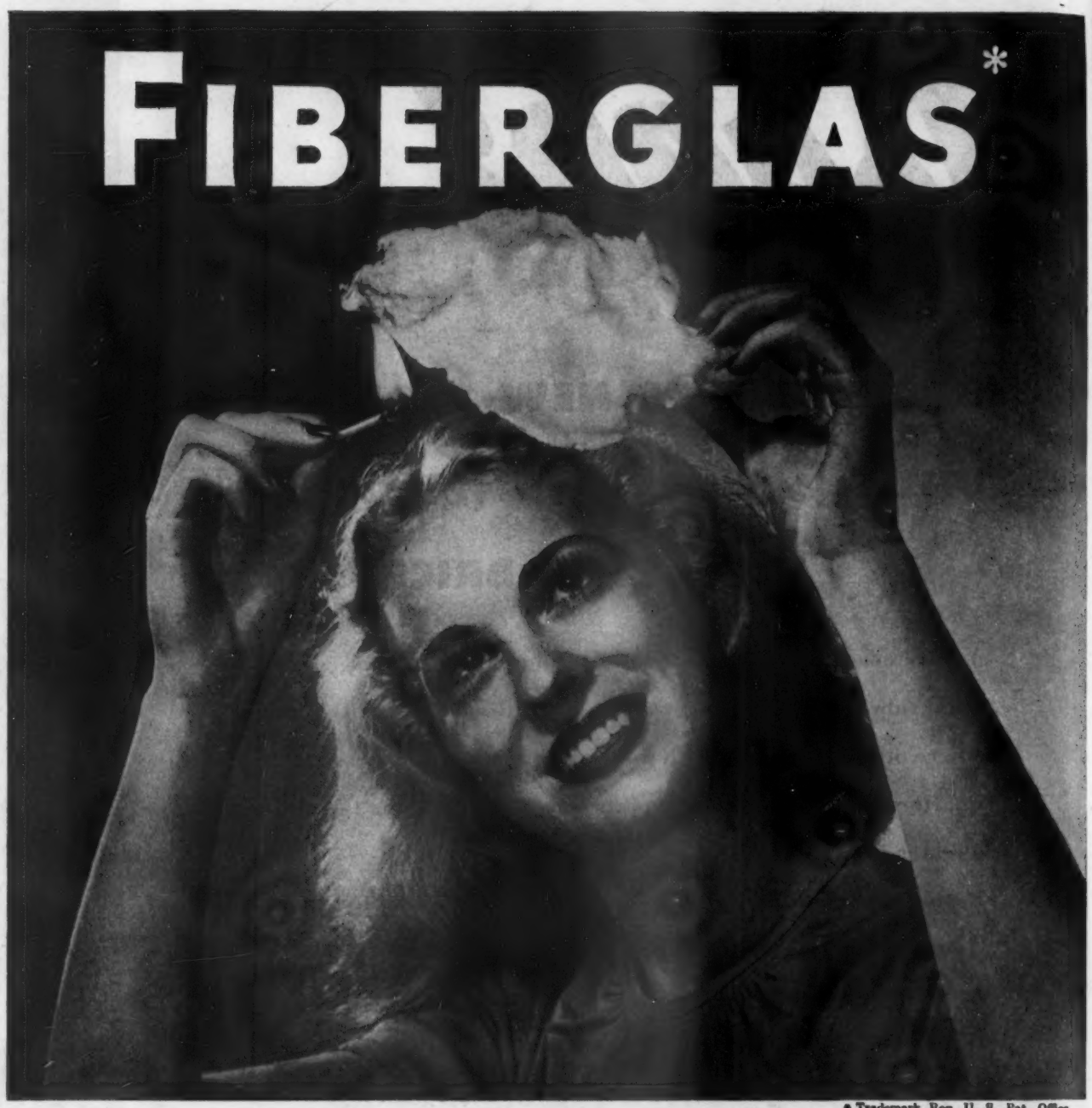
-Tough!

GOODALL SETS NEW STANDARDS WITH *Blended for Performance* COATED FABRICS

You've heard a lot about the wonderful new coated and vinyl fabrics. Revolutionary as they are, Goodall actually starts where others leave off! With the "know-how" of nearly three quarters of a century, our experts select and combine them to do a better job..."blended-for-performance" we call it. Result—the amazingly superior Goodall coated and vinyl fabrics. And to assure perfect performance under the severest conditions, Goodall Fabrics are put to tortuous tests in the Goodall laboratories. These tests prove that Goodall coated and vinyl fabrics are the finest on the market today. Plan to use them now to guarantee complete customer satisfaction.



Goodall Fabrics, Inc.
(Division of Goodall-Sanford Inc.)
295 5th Avenue, N.Y. 16, N.Y.



* Trademark Reg. U. S. Pat. Office by Owens-Corning Fiberglas Corp.

CAN NOT BURN...

glass fibers are absolutely incombustible

Thermal insulations for Passenger Cars, Refrigerator Cars, Tank Cars and Locomotives.

Fiberglas* is sold to Railroads and Car Builders exclusively by

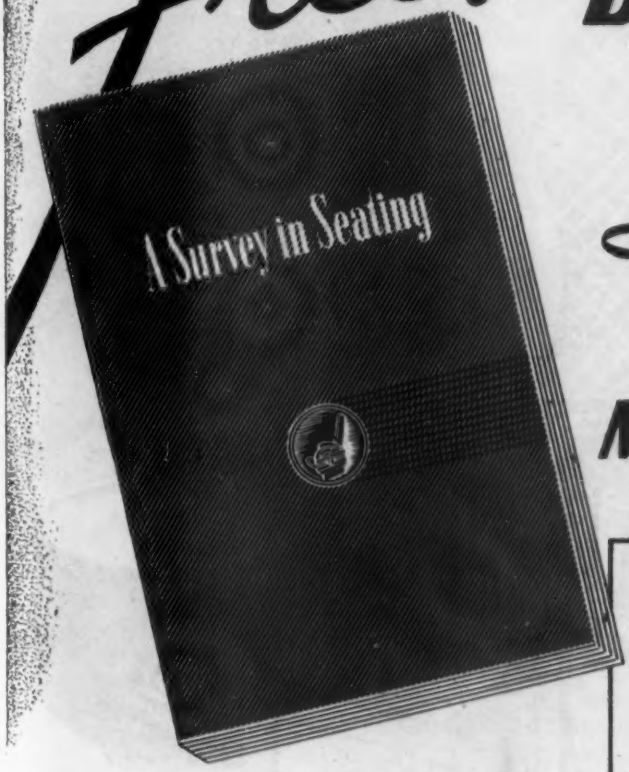
G·B MFG. CO
ESTABLISHED 1898

GUSTIN-BACON MFG. COMPANY

KANSAS CITY 7, MISSOURI

New York Philadelphia Chicago Tulsa Houston Fort Worth San Francisco

Free!



DR. HOOTON'S BOOK ON Standard SEAT MEASUREMENTS

HEYWOOD-WAKEFIELD COMPANY
Gardner, Massachusetts

Please send me a copy of Dr. Hooton's A SURVEY IN SEATING. I understand this is free.

Name.....

Railroad..... Position.....

Street..... City..... State.....

RA 10-13-45

DR. EARNEST A. HOOTON'S study of body measurements is now in book form. It is made available *at no cost* by Heywood-Wakefield as a service to the railroad industry.

● Heywood petitioned Harvard University to have its eminent anthropologist conduct this survey because railway seat comfort always *varied greatly* due to an inconsistency of measurements. Heywood was *determined* to find those dimensions in seat construction that would bring about the *greatest comfort* to the majority of passengers. *That we have succeeded* is borne out by the fact that the Car Construction Committee of the American Association of Railroads *approved* the dimensions tabulated by Dr. Hooton.

● Just fill out and send the above blank to us for your copy of this report. It is *free*.

HEYWOOD-WAKEFIELD

Established 1826 • Gardner, Massachusetts

TRANSPORTATION SEATING DIVISION



"Of course Otis makes small freight elevators, too."

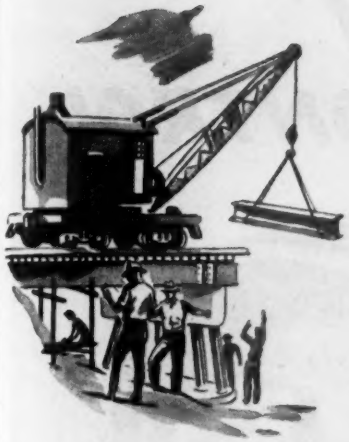
For a great many years, small freight elevators made up the greatest part of Otis business. Today, they still constitute a large percentage of Otis sales.

Small or large, for two stories or twenty, with Otis freight elevators you are assured of dependable and economical performance.

Your Otis representative is ready now to consider your requirements and to recommend the elevator equipment best suited to your needs. For the finest in vertical transportation tomorrow, call your Otis representative TODAY.

Otis ELEVATOR COMPANY
OFFICES IN ALL PRINCIPAL CITIES

For strength...durability and uniform fabricating qualities, specify REPUBLIC PLATES



From the selection of ore, through the final rolling operations, the end use of the plate product—whether structural, industrial, marine or other applications—is continuously kept in mind by Republic's metallurgists and operating specialists.

Thus you are assured of a uniformly high quality material which meets your exact requirements for every type of job.

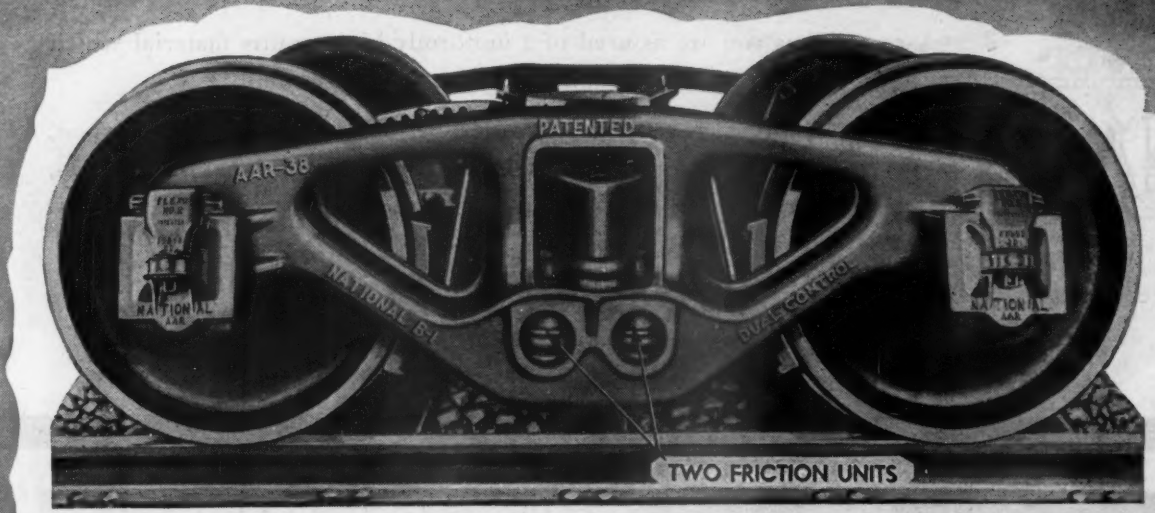
Republic manufactures a wide line of plate products—in carbon, alloy, high strength and stainless steel. For additional information, pertaining to your own needs, write directly to:

REPUBLIC STEEL CORPORATION
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N. Y.



Other Republic Products include Carbon, Alloy and Stainless Steels—Pipe, Sheets, Strip, Bars, Wire, Pig Iron, Bolts and Nuts, Tubing

Protect Car & Lading by DUAL CONTROL



Designed for Smooth Riding and Safety at any speed, whether light or loaded.

NATIONAL B-1 TRUCKS WITH DUAL CONTROL not only protect the lading, but prolong the life of cars, rail structure and roadbed.

Four friction elements built into each truck control both vertical and horizontal oscillations, and make separate snubbers unnecessary.

Standard or special springs are optional.

No Spring Plank—Fewer Parts—Quick Wheel Change

NATIONAL MALLEABLE AND STEEL CASTINGS CO.

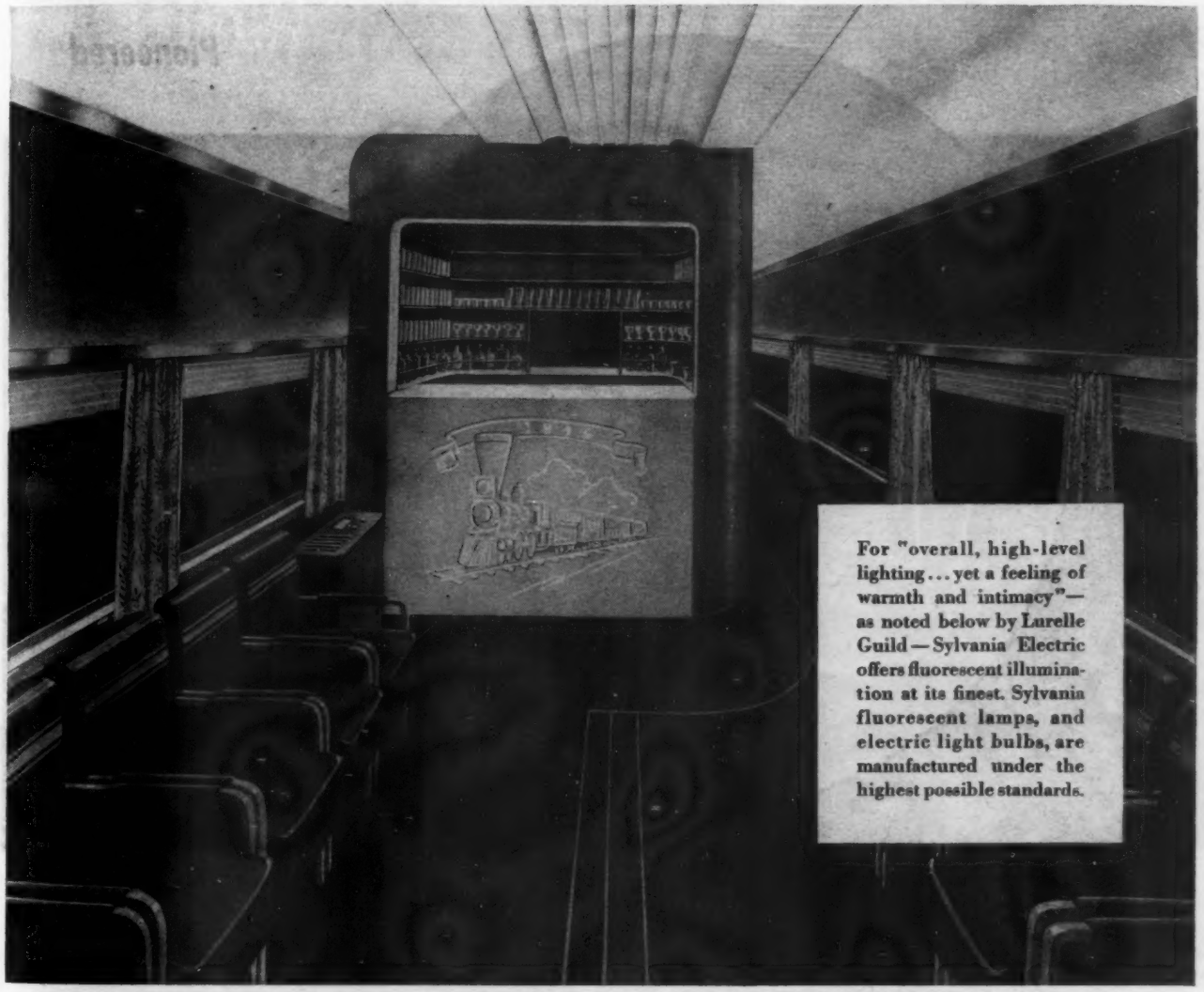
General Offices: CLEVELAND, OHIO

Sales Offices: New York, Philadelphia, Chicago, St. Louis San Francisco.
Works: Cleveland, Chicago, Indianapolis, Sharon, Pa., Melrose Park, Ill.

Canadian Representatives, **Railway & Power Engineering Corporation, Ltd., Toronto and Montreal**

Railway Lighting Ideas

by LURELLE GUILD



For "overall, high-level lighting... yet a feeling of warmth and intimacy"—as noted below by Lurelle Guild—Sylvania Electric offers fluorescent illumination at its finest. Sylvania fluorescent lamps, and electric light bulbs, are manufactured under the highest possible standards.

Fluorescent Lamps and Electric Light Bulbs by SYLVANIA

"Appropriate lighting is one of the most important factors to consider when planning the club or lounge car of the modern railway train," notes Lurelle Guild, eminent industrial designer.

"As illustrated above, overall, high-level lighting must be provided for . . . yet a feeling of warmth and intimacy should not be omitted. To accomplish this, the general illumination is supplied by long lines of cool fluorescent lighting extending the entire length of the car, and further diffused by a ground glass shield. Along the sides of the headliner, lighting built into coves affords complementary fluorescent illumination.

"Then for a more decorative effect, as well as for personal comfort, fluorescent lamps are installed behind the car window valances—an important trend."

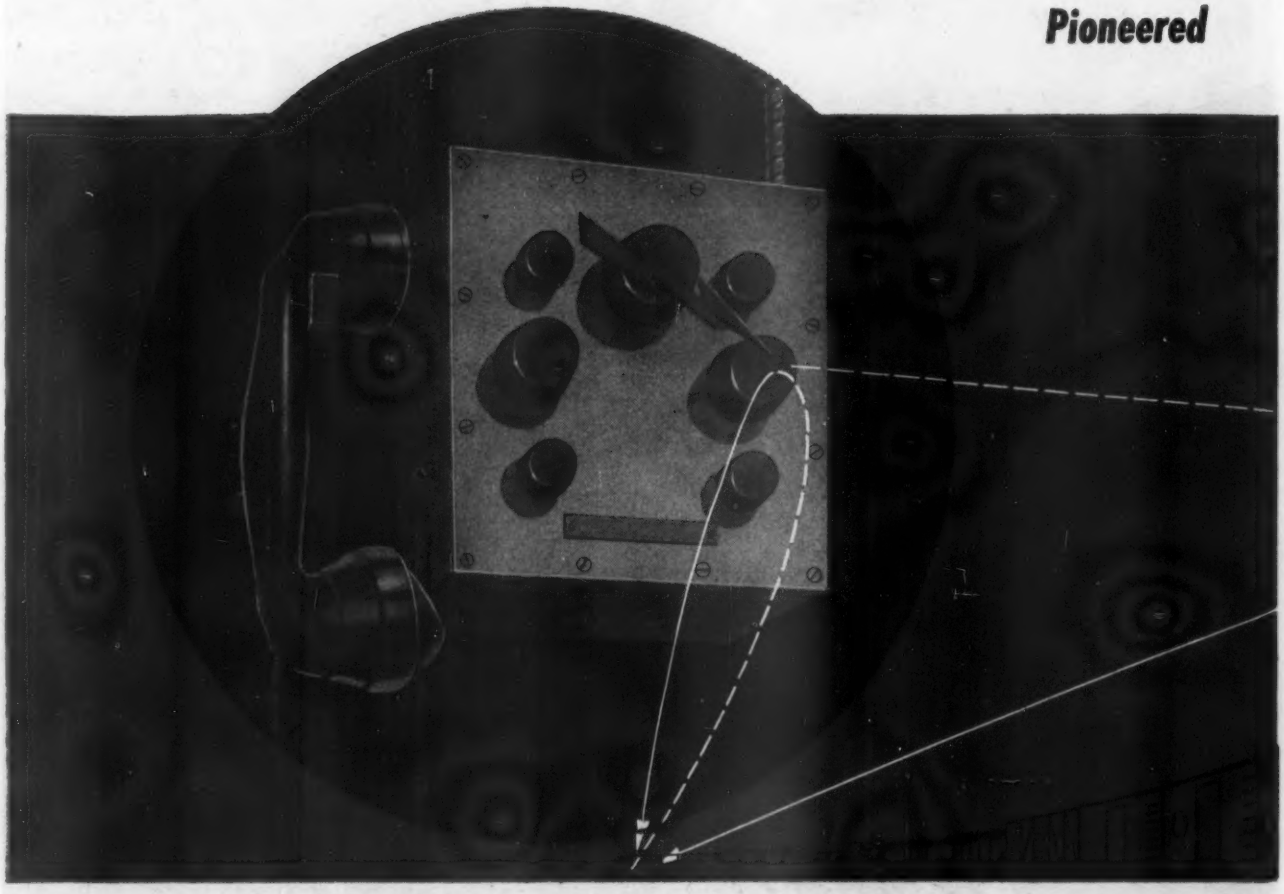
Write Sylvania Electric Products Inc., Salem, Massachusetts.

SYLVANIA ELECTRIC

MAKERS OF FLUORESCENT LAMPS, FIXTURES, WIRING DEVICES; ELECTRIC LIGHT BULBS; RADIO TUBES; CATHODE RAY TUBES; ELECTRONIC DEVICES

Train Radio

Pioneered



Westinghouse again proves its leadership in the field of Railroad Electrical Equipment . . . with the development of "Train Radio", designed and built *specifically for railroads.*

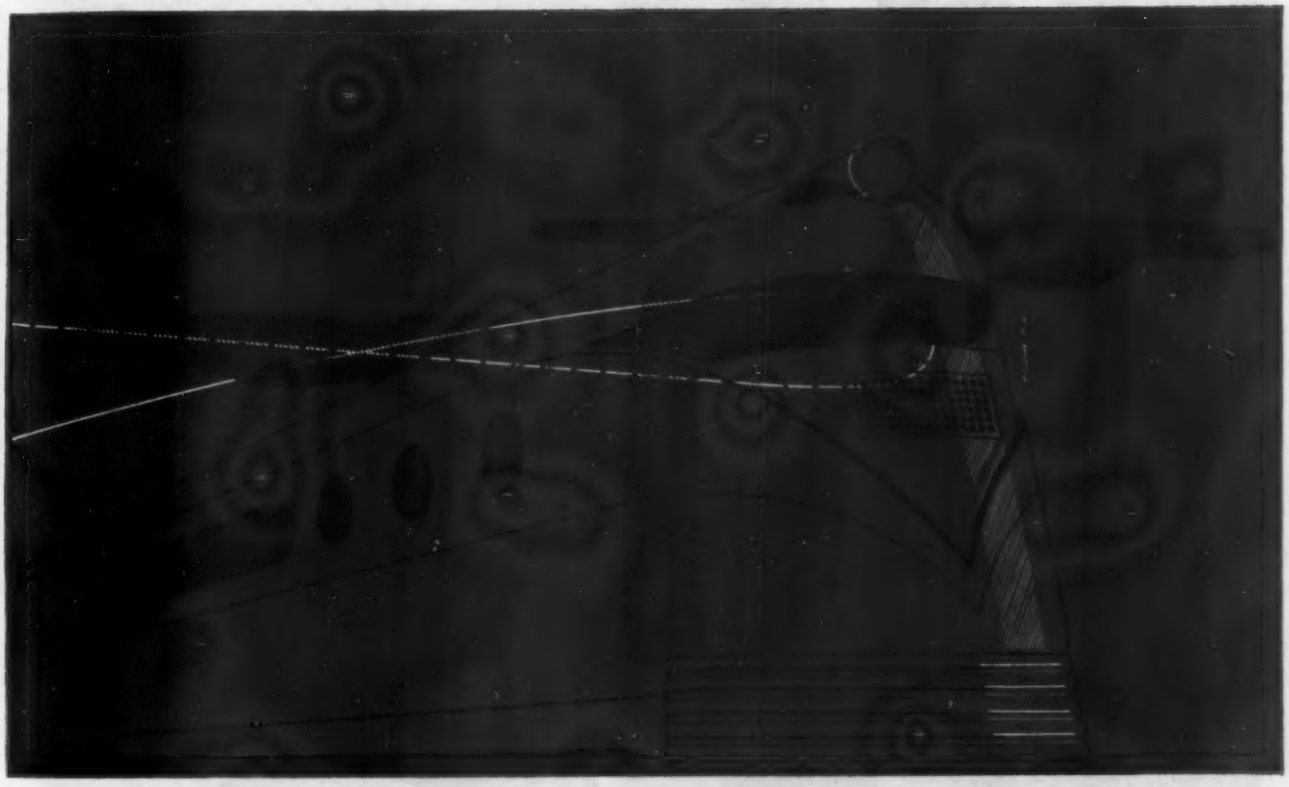
First installed by Westinghouse in 1925 on an eastern railroad, and more recently used in successful experimental installations on the New Haven Railroad . . . this new important transportation development speeds routing . . . dispatching, and assists in the direction of repair and maintenance work . . . helps crew co-ordination . . . simplifies inspection.

The Westinghouse Train Radio permits instant, clear, three-way conversation . . . wayside station to train . . . train to train . . . engineer to caboose.

WESTINGHOUSE

FOR OVER 60 YEARS THE BEST KNOWN NAME

by Westinghouse



Westinghouse . . . Radio Firsts

- ***FIRST*** to install Train Radio . . . in 1925 on an eastern railroad.
- ***FIRST*** to originate short wave broadcast in 1922 by 8XK Pittsburgh.
- ***FIRST*** to build a remote pickup station in 1924.
- ***FIRST*** to apply for patent on cathode ray tube for television—November 16, 1929.

• • •

For application of Westinghouse Train Radio to your communication system . . . contact your nearest Westinghouse office or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-95111

Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE



Photo: Opening the Morton-Zip Vestibule Seal installed on a Union Pacific Streamliner.

Cut-away View: Construction of Seal is indicated by this cut-away view.

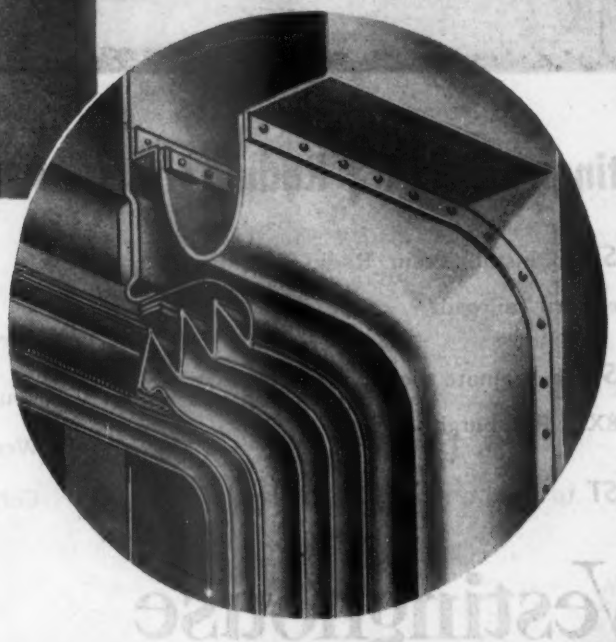
Now --

A Real Vestibule Seal for Air-Conditioned Trains

Cleaner car interiors and greater passenger comfort result from the application of Morton-Zip Vestibule Weather-Seals inside the regular vestibule diaphragms as shown in the illustration. This new device, now offered by Morton, has been thoroughly tested in actual operations, notably on the Union Pacific's famous *City of Los Angeles,* part of whose run is through desert areas where dust conditions are unusually severe.

Installation and use are extremely simple, and cars equipped with the new Morton Seal can be coupled to non-equipped cars as necessary. The cost is moderate, but the returns in passenger satisfaction can be amazing.

We'll be glad to send you an illustrated folder with further details, or to make specific recommendations for your cars, new or old. Address the nearest office.



DISTRICT SALES OFFICES

New York, N. Y.—30 Church St., Courtland 7-7542
Chicago, Ill.—332 S. Michigan Ave., Wabash 6789
St. Louis, Mo.—Paul Brown Bldg., Central 3348
St. Paul, Minn.—E906 First National Bank Bldg., Cedar 1940
Washington, D. C.—6945 Wisconsin Ave., Bethesda, Md., Wisconsin 7378
San Francisco, Calif.—Room 223, 68 Post Street Exbrook 0811

MORTON MANUFACTURING CO.

5105 WEST LAKE STREET · CHICAGO 44, ILLINOIS

TOOLS { FOR RAILROAD POLE-LINE WORK



FOR FASTER, SURER SPLICING — Nicopress sleeves and No. 51 splicing tool save time, reduce expense, and produce strong, tight, moisture-proof joints. One man can splice the wire — on the ground or on the poles. Each splice develops the full rated strength of the conductor.



PLIERS FOR ALL PURPOSES — Linemen favor Klein's pliers because of their firm grip, handy shape, powerful leverage, and keen cutting knives. GRAYBAR offers all types: long-nose, chain-nose, curved-nose, duck-bill, sleeve, cord-tip-closing, side-cutting, oblique-cutting, and end-cutting.



CLIMBERS THAT COMBINE COMFORT WITH SAFETY — Klein's No. 1939 linemen's climbers weigh only 2½ pounds per pair — less than ordinary styles. Yet they are amply strong, and every one has been tested. GRAYBAR also supplies Klein's climber straps, ankle straps, climber pads.



SUPERSTRONG SAFETY STRAPS — "Klein-Kord" safety straps provide utmost protection. Each of six plies of specially woven, long-staple cotton yarn is laid in rubber and vulcanized. Snaps and buckles are galvanized, drop-forged steel, individually tested to withstand a 1500-pound pull.

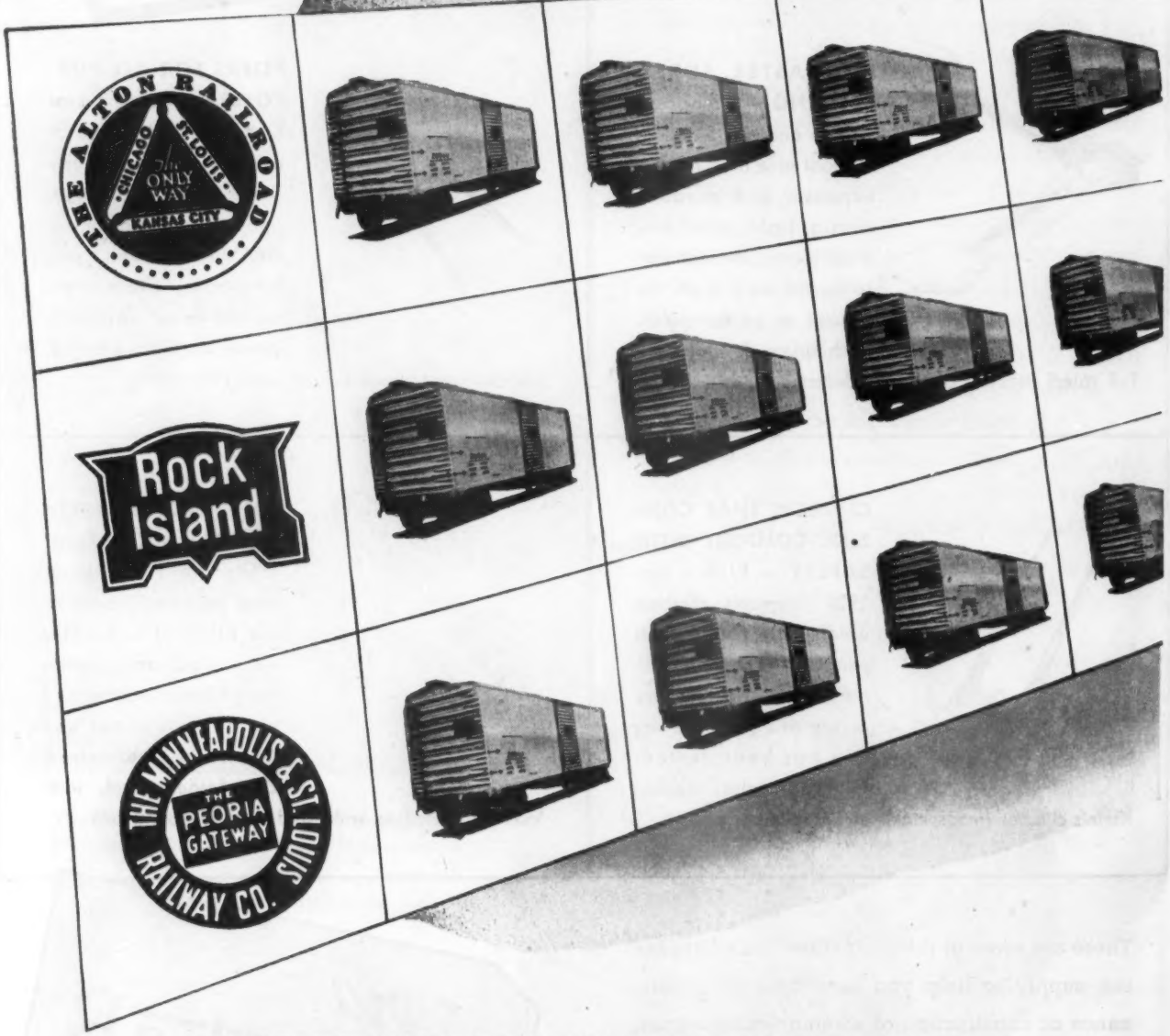
These are some of the specialized tools Graybar can supply to help you save time on maintenance or construction of communications lines. For complete information about tools, poles, crossarms, anchors, pole-line hardware, or other outside construction supplies or equipment, call the Graybar Railroad Specialist near you. He can give you experienced aid in selecting and applying the best items for your particular railway needs. *Graybar Electric Company, Graybar Building, New York 17, N. Y.* 4543

via GraybaR

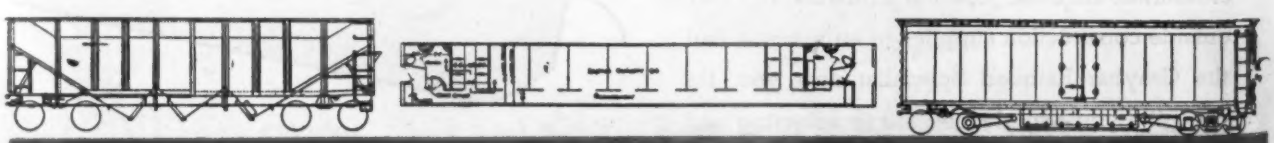
IN OVER 80 PRINCIPAL CITIES

HOW UP-TO-DATE ARE YOU ON ALUMINUM?

Box Car



THREE REYNOLDS-DESIGNED ALUMINUM CARS



50-TON 3-HOPPER CAR. Aluminum body. Length: 36' 0" over striking castings. Inside width 10' 4". Designed by Reynolds. Approved by A.A.R.

LAYOUT DESIGN OF "DAY-NIGHT" passenger coach developed by Reynolds. Seats 54, sleeps 54 passengers. Width: 10' 0" over framing. Length: 73' 6" over body and posts; 79' 2" over pulling faces of couplers.

REFRIGERATOR CAR. Designed to A.A.R. requirements. 14,000 lbs. lighter. Uses less ice. Length: 44' 10" over pulling faces of couplers.

Box Score



30 ALREADY DELIVERED

...more on the way

ROLLING THE RAILS TODAY all over the U. S. are thirty A.A.R. Approved, Reynolds-designed aluminum box cars, purchased by three Class I railroads.

Great new alloys developed by Reynolds metallurgists to add lightness and strength to our warplanes have made possible revolutionary advances in box car construction! Now it is possible to save tons in weight, with no loss in structural strength.

Here are a few advantages: . . . Weight saving of 9000 lbs. . . . Reduced costs for train and switching service . . . High corrosion-resistance . . . Increased load capacity . . . Center of gravity, when empty, only 48" above the rail . . . Unusual number of side posts (24) reduces outward deflection of sides under load.

These great Reynolds alloys make practicable improved cars for *all* types of rolling stock, including Reynolds-designed 50-ton 3-Hopper cars, "Day-Night" passenger coaches, and Refrigerator Cars.

' ' '

Reynolds invites inquiries. Blueprints available. Reynolds Metals Company, Railway Supply Division, 310 South Michigan Boulevard, Chicago 4, Illinois.

REYNOLDS METALS

REYNOLDS ALUMINUM

The Great New Source of

INGOT · SHEET · SHAPES · WIRE · ROD · BAR · TUBING · PARTS · FORGINGS · CASTINGS · FOIL · POWDER

"My goodness! It's real Juglans Nigra..."



. . . that's American Walnut, you know.

I could hardly believe my eyes when I got off the train here in Centerville last Sunday. The station used to be a positive disgrace.

But now the waiting room looks so friendly and comfortable. It was just like a great big *welcome home*. You know I have been teaching here in Centerville High for 17 years, and it certainly made me feel good to come back from my vacation and step into a station like we have now.

I just couldn't help telling Bill Butler . . . he's Station Master, you know... how nice it looked. He told me all about Weldwood Hardwood Plywood... that's what they used to remodel the station, although I think rehabilitate would be the proper word.

"Bill" said this Weldwood isn't nearly as expensive as it looks . . . in fact, he says, when you consider how quickly a job can be done, it's not expensive at all.

He said it comes in four by eight foot sheets, and two good carpenters can panel a wall *very* quickly. They *must* have done the job in a hurry, because I was only able to be away three weeks this year.

Of course, another nice thing for the railroad is that it's *real* wood, and will last just about forever, with practically no attention.

And then, it actually grows *more* beautiful as it mellows with age.

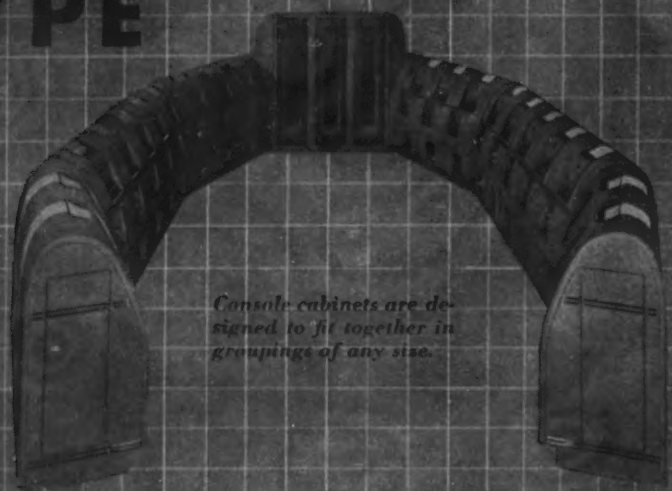
And that reminds me, I don't see why we can't have our school library paneled with Weldwood. It must be really good when railroads buy it.

* * *

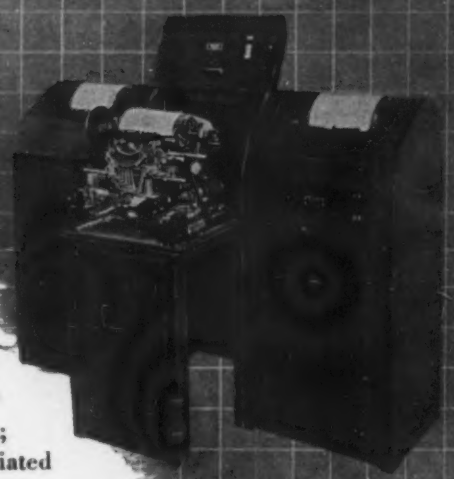
Weldwood Hardwood Plywoods are made in practically *any* domestic or imported wood you can name.

UNITED STATES PLYWOOD CORPORATION
55 West 44th Street, New York 18, N.Y.

Plan ahead with TELETYPE



Console cabinets are designed to fit together in groupings of any size.



See how easy it is to get at these Receiving Printers for servicing.

You can see at a glance that Teletype has been modernized on the outside.

But—it's what goes on inside the cover that really counts. And it is there that Teletype engineers are constantly seeking—and *making* improvements.

Among the recent advances are:

higher operating speeds—more traffic in less time;
compact arrangements of automatic transmitters and reperforators with the message typed directly on the reperforated tape for simple and efficient relaying;
remote control of reperforators through associated Model 15 page printers;
special large type and continuous copy display for announcing train arrivals;
party line station selectors.

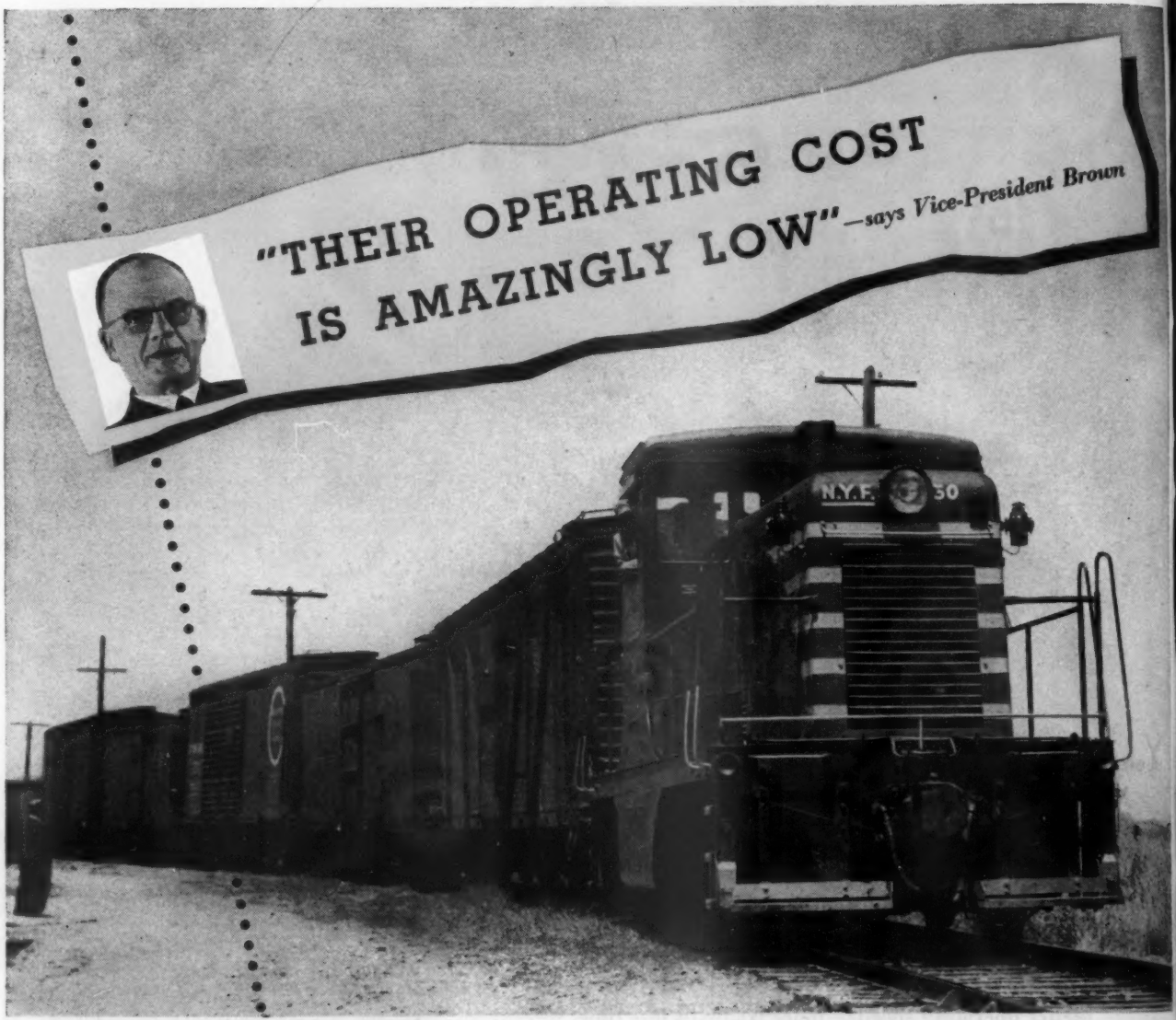
Why not take full advantage of these and other features when you plan post war modernization of your communications? Now that war controls have been relaxed, Teletype is in a better position to serve you—and in more ways than ever before! Teletype Corporation, Chicago, Ill.



This streamlined console contains a Receiving Printer.

TELETYPE
REG. U. S. PAT. OFF.
SUBSIDIARY OF
Western Electric Company
INCORPORATED

Buy all the Victory Bonds you can—and keep them!



"It's pretty hard to beat the low cost of 14⅔ cents per locomotive mile experienced by the San Francisco and Napa Valley Railroad." So says C. E. Brown, the Railroad's Vice-President, speaking of the economy of the three "Caterpillar" Diesel-powered 44-tonners which handle all the vital war freight on the 8½-mile haul from the Southern Pacific's main line to the huge Pacific Coast Naval Base at Mare Island, California.

In-and-out tons totaling 705,179 were moved in 1944 by these three locomotives, working approximately 200 hours each per month. Each locomotive's two "Caterpillar" Diesel Engines consumed an average of slightly under 7 gallons of low-cost Diesel fuel per hour on a basis of an 8.3-mile hour.

"We ordered two 44-tonners equipped with 'Caterpillar' Diesel Engines in 1942 and were so impressed with the excellent performance they gave that, when the need arose, we ordered another," said Mr. Brown. "I'd recommend 'Caterpillar' Diesel Engines to any one planning 44-tonner operations. Their operating cost is amazingly low."

The economy of which Mr. Brown speaks is just one of many outstanding features railroaders have found in "Caterpillar" Diesels. These dependable, long-lived engines, direct-connected to generators, power approximately 90% of the 44-tonners in the Western Hemisphere.

Is *your* road following the trend to 44-tonners? WRITE for more facts about "Caterpillar" Diesels.

CATERPILLAR TRACTOR CO. • PEORIA, ILL.

CATERPILLAR
REG. U.S. PAT. OFF.
DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

The discharged veteran wears this emblem. Remember his service and honor him.



d two 44-tonners
"Caterpillar" Diesel
2 and were so im-
the excellent per-
gave that, when
, we ordered an-
Mr. Brown. "I'd
Caterpillar' Diesel
ny one planning
ations. Their oper-
nazingly low."

ny of which Mr.
s just one of many
atures railroaders
"Caterpillar" Die-
ndable, long-lived
connected to gen-
pproximately 90%
rs in the Western

ollowing the trend
WRITE for more
terpillar" Diesels.

R CO. • PEORIA, ILL.

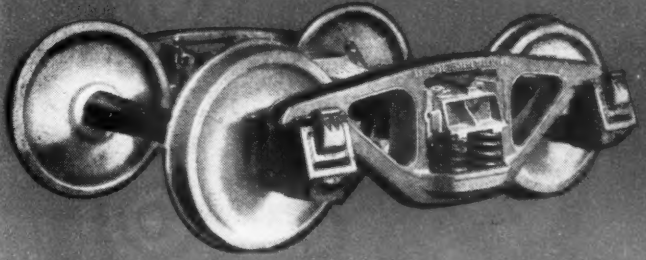
Lading gets an easy ride in cars equipped with A.S.F. Ride-Control Trucks. All bolster motion is constantly controlled, and long-travel springs provide ample reserve spring travel for cushioning dynamic shocks at all speeds under full load.

MINT-MARK OF ⬡ FINE CAST STEEL

Over 17,000 car sets of this modern freight car truck are already in service or on order by 43 railroads and private car owners.

A·S·F *Ride-Control* TRUCK (A-3)

NO SPRING PLATES—NO SPRING PLANKS



LONG SPRING TRAVEL · CONSTANT FRICTION CONTROL

AMERICAN STEEL FOUNDRIES

CHICAGO

RAILROAD executives are using these **5** "How-they-do-it" Studies

Since last Spring, when we offered to lend out these studies of the economies being obtained by railroads with modern record-control methods and routines, numerous executives have found in them suggestions that are sound, easy to put into effect and immediately helpful.

So gratifying has been this response that we gladly repeat the offer for the benefit of others. This material, originally prepared for the use of our own staff, is based directly on factual surveys of procedures currently used on some 40 different systems. All methods and results are set forth clearly and explicitly.

GENERAL STORES DEPARTMENT



Management Controller #689

Wartime conditions have emphasized as never before the need for adequate control of the vast amount of maintenance stores required by the railroad. On a number of major systems a careful review of this phase of operations has led to the improvements revealed in this detailed study. Results reduce out-of-stock conditions, increase utilization of available materials, and speed up ordering routines.

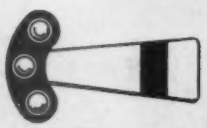
FREIGHT AND PASSENGER TRAFFIC



Management Controller #701

Traffic Department record control that "sells" railway services—from business solicitation, through the many traffic handling phases that build public satisfaction and good will—are presented in this valuable handbook. The effective use of records in directing of freight and passenger solicitation activities is discussed, as well as information, reservation, ticket redemption and other record control requirements.

OPERATING DEPARTMENT



Management Controller #702

In Car Service, Freight Transportation, Motive Power Maintenance, Engineering and other operating departments, effectively designed record controls are helping to speed up and simplify a multitude of vitally important routines. The records illustrated and described in this Management Controller are in actual use today on Class I railroads, simplifying and speeding up routines and contributing to more efficient operations.

PERSONNEL AND PAYROLL



Management Controller #700

Railroad personnel administration records today are not simply those that satisfy the demands of good business operation. They must also provide data required for reports and proof of compliance with various government regulations and acts. This study presents some of the most effective personnel and payroll records currently in use. They have been developed by experienced operating officials in cooperation with our Systems and Methods Technicians.

ACCOUNTING AND TREASURY



Management Controller #703

Never in the history of railroading has so much importance been attached to the necessity of simplifying accounting and statistical record keeping systems. The multiplication of records, combined with the scarcity of competent clerical help, has made it vital to eliminate "frills", unnecessary details. This study shows how it is being done by practical officials of leading railroads.



SEND NOW

Railroad executives desiring to study one or more of these important surveys may obtain them on special free loan service from our nearest Branch Office. Please ask for them by name and number.

SYSTEMS DIVISION

REMINGTON RAND

315 Fourth Ave., New York 10, N. Y.

COPYRIGHT REMINGTON RAND INC.

ARE *BAKER TRUCKS* MAKING SAVINGS FOR YOUR COMPETITORS—THAT YOU ARE MISSING?

In the days of keen competition just ahead, are you prepared with the most efficient, cost-reducing material handling equipment? Look over these actual case histories. There are many more of them. In fact, every Baker truck sold quickly pays for itself out of savings.



A large aircraft producer saves time by delivering cutting oils to machines with this mobile "service station" on a Baker Truck.



A printer and publisher saves thousands of dollars annually in warehouse rentals by tiering stock with a Baker Truck.



A stove manufacturer reduced handling costs from 35¢ to 4¢ per ton on a single operation. Overall costs were reduced 75%.

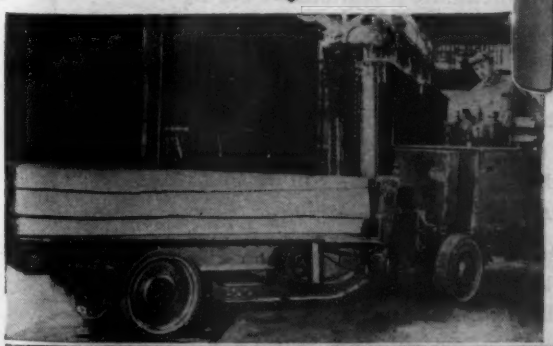
A stevedoring company moves 18 crated motor cars per hour from lighter to pier bulkhead —saves 20% on handling costs.



Carloading costs for one plant were reduced 25¢ per ton or $12.50 per car, releasing 7 men for other jobs.



This Baker Articulated Sheet Handler loads 200 tons of large sheets per hour and saves a steel mill $4.30 per ton.





A company saves $7,956.00 per year on handling costs in one of its warehouses with a system using a Baker Truck.

The Baker Material Handling Engineer can show you how similar savings may apply to your plant. Phone our nearest agent—or write us direct.

BAKER INDUSTRIAL TRUCK DIVISION
of The Baker-Raulang Company
2172 WEST 25TH STREET • CLEVELAND, OHIO
In Canada: Railway and Power Engineering Corporation, Ltd.



KATHANODE

CAR LIGHTING AND AIR-CONDITIONING BATTERIES

Minimize YARD CHARGING





Inspecting batteries on one of the many fine trains that are Kathanode equipped.



Kathanode's high charging efficiency is primarily due to its special negative plate. This has an active material of unusually high density. It is less inclined to permanent sulfation and therefore requires less current in the conversion from sponge lead to lead sulphate.

The more efficient utilization of charged current means that Kathanode car lighting and air conditioning batteries will remain fully charged even on short runs and long station stops. They will supply the high rates required by compressors and still maintain voltage for adequate car illumination. They will do this with a minimum of yard charging.

Write Dept. 1410 for Catalog 800 on Gould Kathanode Glassklad Batteries for Car Lighting and Air Conditioning Service.

GOULD

PIONEER OF GLASSKLAD CONSTRUCTION

GOULD STORAGE BATTERY CORPORATION, Depew, N. Y.
Factories: Atlanta • Chicago • Dallas • Depew • Leavenworth • Los Angeles • North Bergen • Rock Island • St. Paul • Salem • Sioux City • Zanesville

Is there a way to get 4 times the service from things made of steel?

THE ANSWER to this question may soon affect your life . . . *and* your pocketbook . . . in a big way. Because there is a remarkable discovery that will enable you to get up to *4 times the service* for every dollar spent on items made of steel! From washing machines, automobiles, hardware, tools, wire fencing, screens—dozens of products whose life was formerly cut short by rust.

This remarkable discovery is CORRONIZING, a new patented process of plating steel with a tissue-thin "armor" that *far outlasts other rust-protection coatings.*

Actual use in the war, in every kind of climate, gives proof to that statement. Now, America's more progressive manufacturers and retailers will be able to bring you many articles with the sensational advantages of "Corronized" steel. New model automobiles, always famous for progress, will be among the first to bring you these advantages.

So, if you want utmost dependability, lasting beauty and safety in things made of steel, wisely inquire whether they are made of "Corronized" steel. If they are, you'll be the winner in years of service . . . *by as much as 4 to 1!*

Standard Steel Spring Co.

ORIGINATORS OF

CORRONIZING



CORRONIZED
For Enduring Protection
Against Rust

Quick Facts for Manufacturing and Sales Executives

Do not confuse CORRONIZING with other metal coatings. This patented process provides a permanent alloy "armor" with 5 layers of defense against corrosion! It becomes part of the steel base . . . can be worked in any manner. Permits using lighter materials by prolonging steel's period of greatest strength. Write for samples and complete information.

STANDARD STEEL SPRING COMPANY
CORAOPOLIS, PENNSYLVANIA

higher

POWERED FOR PROFIT

Consider these advantages in standardizing on *high speed* Cummins Dependable Diesels for the railroad equipment you build or operate. Three proved-on-the-job models—150, 200, 275 hp—have the same basic design, and practically the same mounting dimensions . . . weights as low as 10½ pounds per horsepower . . . many interchangeable parts . . . same service procedure. Results: in effect, you meet varying power requirements with "one engine" . . . you save engine weight and space . . . you reduce parts inventory . . . you simplify the mechanic's job and cut service costs.

CUMMINS ENGINE COMPANY, INC., Columbus, Indiana

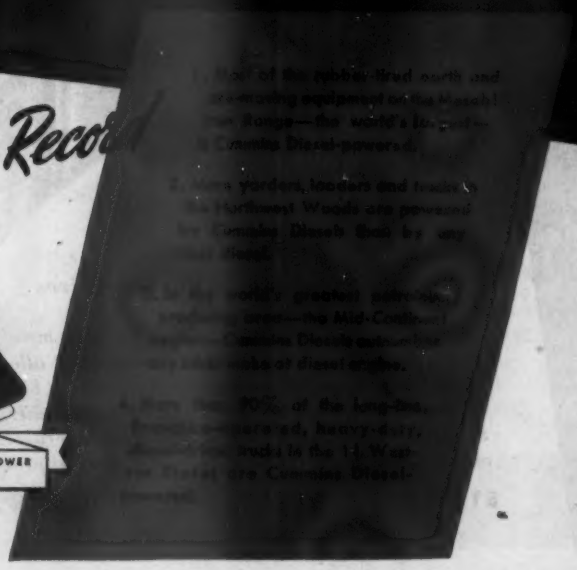




Read the Reco

CUMMINS DIESELS

SINCE 1919...PIONEER OF PROFITABLE POWER THROUGH HIGH SPEED DIESELS



HIGHBALLING THRU with Radio Teamwork



Flying Ute Cuts 3 Hours from Average Running Time



DENVER, COLO.—Using Motorola Radio 118 Mgc. equipment for vocal communications between locomotive and caboose, the "Flying Ute," crack freight of the Denver and Rio Grande Western, cut three hours off the average running time between Denver and Salt Lake City, it was announced today after a trial run.

Rock Island Lines First to Use R.R. Radio

CHICAGO, ILL.—The Motorola F-M 2-Way Radio Station operated by the Rock Island Lines in their Blue Island Yards is the first federally licensed railroad radio.

Increase SPEED-SAFETY-EFFICIENCY

with **Motorola** 2-WAY F-M RADIOTELEPHONE

Instant contact between dispatcher, engineer and conductor means less running time, far greater safety, and more efficient traffic control. Two-way radio helps your crews function as a coordinated team, and the saving in time and effort rapidly pays for the cost of installation.

CHOOSE *Motorola* FOR *PROVED* DEPENDABILITY

Motorola radios already in use on railroads have proved their efficiency. Highway Police of 34 states and over 1000 communities depend on Motorola for unfailing service. The battle-tough Motorola "Handie Talkie" and "Walkie Talkie" demonstrate the ruggedness and dependability of Motorola products. Motorola engineers *know* mobile communications, and their vast experience in the field will enable them to make specific recommendations concerning your communications problem. Write today, without obligation, of course.

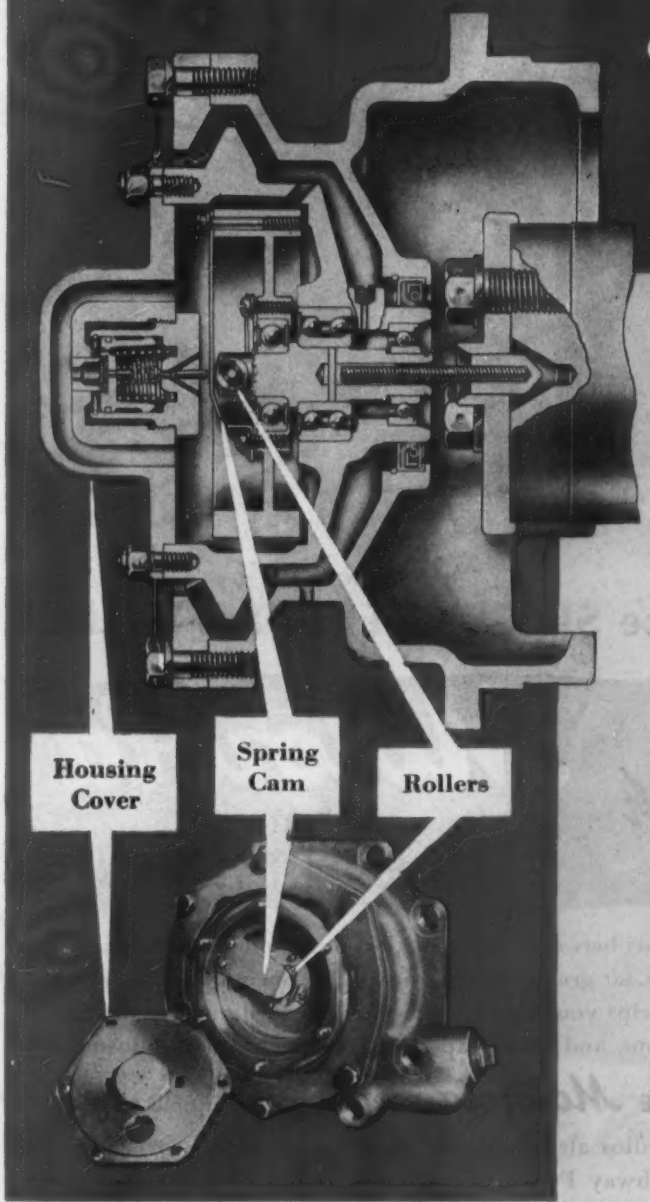
GALVIN MFG. CORPORATION • CHICAGO 51

COMMUNICATIONS AND ELECTRONICS DIVISION

F-M & A-M HOME RADIO • AUTO RADIO • PHONOGRAPHS • TELEVISION • AIRCRAFT RADIO • POLICE RADIO • RADAR • MILITARY RADIO

A Look through the *Middle* of the "AP" Decelostat





SOFTENS THE BRAKE
WHEN WHEEL SLIP IMPENDS

THE "AP" Decelostat truly rolls with the wheel and registers change in wheel retardation when brakes are applied. If the wheel slips, the high rate of retardation motivates the Decelostat to moderate the braking force and forestall slide.

Sensitivity is obtained with mechanical simplicity. The Decelostat shaft rolls on ball bearings, front and rear; its actuating medium is a simple spring cam. Mechanical design requires few parts—assures the operating reliability that instantly identifies wheel slip and *softens* the brake.

Westinghouse Air Brake Company

Wilmerding, Pa.

Railway Age

With which are incorporated the Railway Review, the Railroad Gazette, and the Railway Age-Gazette. Name registered in U. S. Patent Office.

Vol. 119 · October 13, 1945 No. 15

PUBLISHED EACH SATURDAY BY THE SIMMONS-BOARDMAN PUBLISHING CORPORATION, 1309 NOBLE STREET, PHILADELPHIA 23, PA., WITH EDITORIAL AND EXECUTIVE OFFICES AT 30 CHURCH STREET, NEW YORK 7, N. Y. AND 105 W. ADAMS STREET, CHICAGO 3, ILL.

WASHINGTON 4, D. C.: 1081 NATIONAL PRESS BUILDING; CLEVELAND 13: TERMINAL TOWER; SEATTLE 1: 1033 HENRY BUILDING; SAN FRANCISCO 4: 300 MONTGOMERY STREET, ROOMS 805-806; LOS ANGELES 14: 530 WEST 6th STREET; DALLAS 4: 4518 ROLAND AVENUE.

SAMUEL O. DUNN, CHAIRMAN. HENRY LEE, PRESIDENT. ROY V. WRIGHT, VICE-PRESIDENT AND SECRETARY. F. H. THOMPSON, F. C. KOCH, R. E. THAYER, H. A. MORRISON, J. G. LYNE, H. E. McCANDLESS, VICE-PRESIDENTS. J. T. DeMOTT, TREASURER.

SAMUEL O. DUNN, EDITOR. ROY V. WRIGHT, MANAGING EDITOR. JAMES G. LYNE, ASS'T. TO EDITOR. CHARLES LAYNG, WESTERN EDITOR. C. B. PECK, ALFRED G. OEHLER, E. L. WOODWARD, J. H. DUNN, H. C. WILCOX, NEAL D. HOWARD, GEORGE E. BOYD, WALTER J. TAFT, M. H. DICK, JOHN S. VREELAND, C. MILES BURPEE, ARTHUR J. McGINNIS, J. L. STOVER, C. B. TAVENNER, H. E. MEASON, CHARLES ROBINSON, GEORGE H. PARIS, LIBRARIAN; EDITH C. STONE, EDITORIAL ASSISTANT; BETTY KETCHUM.

RAILWAY AGE IS A MEMBER OF ASSOCIATED BUSINESS PAPERS (A. B. P.) AND AUDIT BUREAU OF CIRCULATION (A. B. C.).

SUBSCRIPTIONS, INCLUDING 52 REGULAR WEEKLY ISSUES, AND SPECIAL DAILY EDITIONS PUBLISHED FROM TIME TO TIME IN NEW YORK OR IN PLACES OTHER THAN NEW YORK, PAYABLE IN ADVANCE AND POSTAGE FREE. UNITED STATES, U. S. POSSESSIONS AND CANADA: 1 YEAR $6.00; 2 YEARS, $10.00; FOREIGN COUNTRIES, NOT INCLUDING DAILY EDITIONS: 1 YEAR, $8.00; 2 YEARS, $14.00. SINGLE COPIES, 25 CENTS EACH. H. E. McCANDLESS, CIRCULATION MANAGER, 30 CHURCH STREET, NEW YORK 7.

In This Issue

Page

Corrosion Tests Yield Interesting Data ***594***

At Kure Beach, N. C., thousands of metals, alloys and coatings have been studied and methods of timber preservation have been investigated to determine resistance to marine borers. The tests and findings are described herein.

Warns Shippers on Transport Socialism ***598***

Urging Atlantic States shippers to take the "long view" on government-supported transportation facilities, N. Y. C. President Metzman explains that what a shipper "saves" in rates, he pays for in higher taxes, nurtures socialism and menaces free enterprise.

Steam Locomotive Ratings ***605***

A discussion of the principles involved in the establishment of normal steam locomotive output and its effect on train operation over varied profiles.

EDITORIALS

Truman Supports the St. Lawrence Fantasy 589
Vacation-Bound 590
Starting from Scratch 590
Color Dynamics 591
More Uses for Aluminum 591
Full Employment Plus General Poverty 592

GENERAL ARTICLES

Corrosion Tests Yield Interesting Data 594
Warns Shippers on Transport Socialism 598
Material Buying Dips in First Half 600
Raymond J. Morfa Heads M-K-T 602
Signal Section Presents Its Reports 603
Rail Output Hits 15-Year High 604
Steam Locomotive Ratings, by A. I. Totten 605
Conductivity of Fire Streams 608

COMMUNICATION AND BOOKS 609

GENERAL NEWS 610

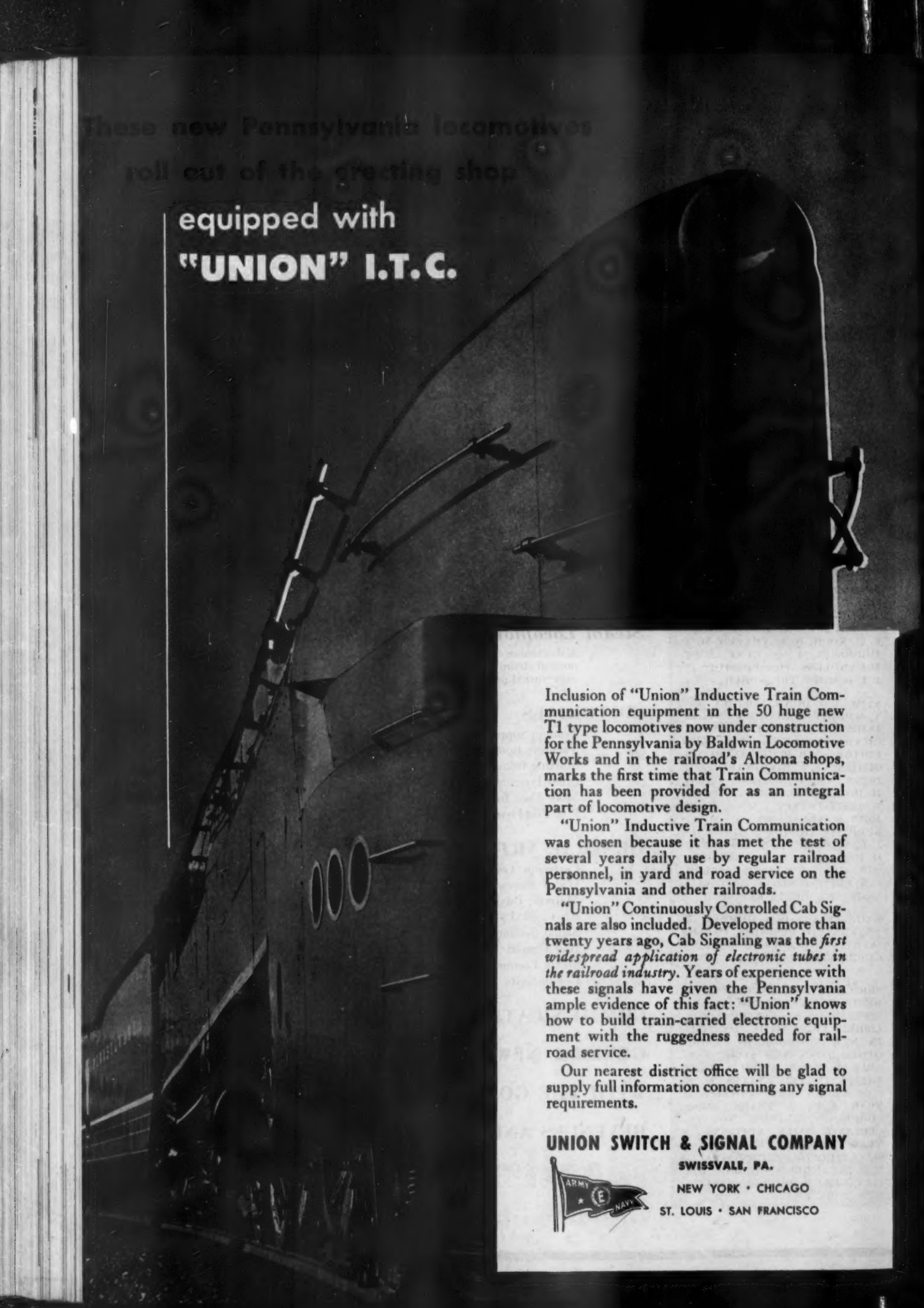
WITH THE GOVERNMENT AGENCIES 615

REVENUES AND EXPENSES 628

The Railway Age is indexed by the Industrial Arts Index and also by the Engineering Index Service

★

PRINTED IN U. S. A.



Inclusion of "Union" Inductive Train Communication equipment in the 50 huge new T1 type locomotives now under construction for the Pennsylvania by Baldwin Locomotive Works and in the railroad's Altoona shops, marks the first time that Train Communication has been provided for as an integral part of locomotive design.

"Union" Inductive Train Communication was chosen because it has met the test of several years daily use by regular railroad personnel, in yard and road service on the Pennsylvania and other railroads.

"Union" Continuously Controlled Cab Signals are also included. Developed more than twenty years ago, Cab Signaling was the *first widespread application of electronic tubes in the railroad industry.* Years of experience with these signals have given the Pennsylvania ample evidence of this fact: "Union" knows how to build train-carried electronic equipment with the ruggedness needed for railroad service.

Our nearest district office will be glad to supply full information concerning any signal requirements.

UNION SWITCH & SIGNAL COMPANY

SWISSVALE, PA.

NEW YORK • CHICAGO

ST. LOUIS • SAN FRANCISCO

The Week at a Glance

INFANTILE ECONOMICS: Support of the St. Lawrence seaway and power project is so generally accepted as "good politics" that the proposed development has long enjoyed the endorsement of leaders in both major parties. Governor Dewey, of New York, the latest Republican aspirant for the Presidency, is in line, as were former President Hoover and the late President Roosevelt. And now Congress has President Truman's St. Lawrence message which follows the path of disingenuousness well-worn by his two immediate predecessors. This issue's leading editorial analyzes that message and finds the Truman exposition infantile as economics or logic—however good its politics may be. The real logic of defending a call upon the federal government to provide electric power and transportation because the electorate has been induced to vote itself more of these services than as users of them it is willing to pay for, is to expect the next step—the electorate's voting itself groceries, clothing and automobiles by the same process.

●

SIGNAL SECTION REPORTS: Continuing its wartime practice of foregoing conventions, the Signal Section of the A. A. R. held a meeting of its committee of direction at Chicago last week, and chairmen of the eleven standing committees presented their reports. An account of the meeting appears in a feature article on page 603. Chairman S. E. Noble expressed his hope that the Section would be able to hold its annual convention next year. He also noted that this year marked the fiftieth anniversary of the founding of the Railway Signaling Club, forerunner of the Railway Signal Association which was merged into the A. A. R. to form the Section.

●

C. P. A. FOR W. P. B.: President Truman has issued an executive order terminating the War Production Board, effective November 3, and transferring its remaining functions to a new agency—the Civilian Production Administration. C. P. A., according to John D. Small, who will be its administrator, will promote "a swift and orderly transition from wartime production to a maximum peacetime production in industry free from government controls, with due regard for the stability of prices and costs." Mr. Small has been chief of staff to W. P. B. Chairman J. A. Krug who is leaving government service when W. P. B. folds. Details of the contemplated C. P. A. set-up are given in a news story herein.

●

CORROSION TESTS: Extensive corrosion tests of metals, alloys and coatings have been conducted for periods varying from 5 to 10 years at Kure Beach, N. C., the project being sponsored jointly by the International Nickel Company, the Carnegie-Illinois Steel Corporation, and the Magnesium Division of the Dow Chemical Company. Approximately 200 other companies and a number of technical societies have cooperated by submitting samples or groups of samples for comparative tests, and data obtained are freely exchanged. The tests include samples exposed to sea air and samples immersed in sea water; and the studies have been extended during the past two years to specimens of treated wood which have been submerged in sea water to determine the resistance to marine borers. An illustrated feature article beginning on page 594 describes the project, its equipment and results of some of the tests.

●

DOING O. K.: The I. C. C.'s Bureau of Transport Economics and Statistics included in the latest issue of its "Monthly Comment" an analysis of average hourly earnings of railroad employees during the first six months of this year as compared to the same period in 1940. The study reveals that average straight-time hourly earnings for all employee groups increased 26.9 per cent over the five-year period, while the average on the basis of all time paid for rose 31.3 per cent. Punitive overtime in this year's first half totaled $260 million, an increase of 730 per cent above the $31 million paid out in 1940's first six months. Further details, including a breakdown of the hourly-earnings figures by employee groups, are given in a news story herein. The analysis is particularly timely in view of the pending wage demands of the railroad labor organizations.

●

REPEALER'S PROGRESS: The Senate last week passed and sent to conference the Boren bill to repeal remaining provisions of the land-grant-rate law. The favorable action came without a record vote when Senator Bilbo, after holding the floor for two days, dropped his threatened 30-day filibuster in return for an amendment making October 1, 1946, the effective date of repeal. This new effective-date provision and the so-called "veterans' farms fund" amendment (immaterial to the railroads) comprise the Senate changes which must be reconciled in conference with the House-approved bill.

●

ROAD TO POVERTY: The answer of economics to depressions and poverty is the elimination or regulation of monopolies and all other coercion which prevents the automatic corrective action of free markets. If monopolistic coercion (whether on the part of labor or industry) were eradicated from the economic machine, the mechanism would correct its own ills, without calling for the services of any bureaucratic master-minds. That thesis is developed in one of this issue's editorials which warns of the need for public understanding of what the left-wing "purchasing power" economists and politicians are proposing in such measures as the Murray "full employment" bill. As Germany and Russia have demonstrated, an all-powerful bureaucracy can make the economy work so that nobody has a chance to be idle, if the people are willing to pay the price in wages of, perhaps, ten million federal employees, and in the loss of individual liberty.

THE LONG VIEW: Gustav Metzman, president of the New York Central, pointed out the "long view" on tax-built transport facilities for members of the Atlantic States Shippers' Advisory Board at their New York meeting last week. The shipper takes Mr. Metzman's "long view" when he recognizes that as a taxpayer he pays for "free" transportation facilities built by the government, and that as a seller of goods he pays again through smaller orders from his tax-burdened customers. As the N. Y. C. president sees it, the problem of public funds represents America's No. 1 transportation problem today; and its solution awaits a means whereby private funds invested in railroads can live alongside public funds invested in highway, waterway and air facilities. He hopes for constructive results from the comprehensive studies of transportation now proposed in resolutions pending before Congress—provided the user of transportation (who is "a sort of umpire") takes the "long view" and does his best to shape public policy accordingly. Mr. Metzman's address is reported in the feature article beginning on page 598.

●

LOCO RATINGS: In an illustrated feature article beginning on page 605, A. J. Totten discusses principles involved in the establishment of normal steam locomotive output and its effect on train operation over varied profiles. The principles emphasized in the article may be employed in combination with factors applying to a particular locomotive to determine its output, provided such factors are applicable to the average rather than the maximum operating conditions.

●

BUYING DIPS: Purchases of fuel, materials and supplies (excluding equipment) showed a slight recession after V-E Day, but such railway buying is still in the large-volume class. The total for this year's first half was $785 million, down only three per cent from 1944's comparable $810 million. *Railway Age* estimates, based on special reports from the carriers, are tabulated and charted in a feature article on page 600.

●

BULWINKLE BILL HEARINGS: This week saw the beginning of House interstate and foreign commerce committee hearings on the bill introduced by Representative Bulwinkle of North Carolina to stay operation of the anti-trust laws with respect to carrier rate-making machinery and other joint actions approved by the I. C. C. Our reporter there heard a comprehensive and carefully documented case for the conference method of making railroad rates, presented by spokesmen for the I. C. C., a majority of the state regulatory agencies and the railroads. But the Department of Justice, whose Anti-Trust Division is prosecuting the carriers for actions which the bill would formally legalize, remains in opposition to the measure. A detailed report of the hearing's opening sessions appears back in the news section.

IT'S A GREAT NEW DAY FOR RAILROADING

SERVICE THAT'S READY

A General Motors Diesel locomotive is never more than a few hours from a specialist in service.

20 Electro-Motive district field men across the country are ready to answer a call; to ride — to check — to test — to help in every way.

No more than 24 hours away is a warehouse ready to supply parts precisely made for GM Diesel locomotives — made exactly for the job by men who know what the job is.

At three strategic points are repair shops where major matters can be taken care of.

That is Electro-Motive service today, ready to provide:

- The right part
- At the right place
- At the right time
- Properly applied
- At the right price.

ADD SECURITY TO VICTORY
BUY MORE VICTORY BONDS

GENERAL MOTORS LOCOMOTIVES

ELECTRO-MOTIVE DIVISION
GENERAL MOTORS CORPORATION · LA GRANGE, ILL.

Truman Supports the St. Lawrence Fantasy

President Truman's message to Congress urging authorization of the St. Lawrence Seaway project, as reported in our last week's issue, followed the path of disingenuousness well-worn by his two immediate predecessors. Undoubtedly Messrs. Hoover and Roosevelt knew better, since their straight reasoning in other analogous situations makes it impossible to plead ignorance as an excuse for their support of this scheme. In Mr. Truman's case, in the absence thus far of conclusive evidence that he knows very much about economics, it is charitable to assume that "he didn't know it was loaded." Be that as it may—a college freshman evidencing as much confusion or sophistry, as the case may be, in his economics and logic as Mr. Truman did in his St. Lawrence message would probably find himself back on the farm in time for the fall plowing.

Federal Power Given Credit for Atom Bomb

The magnitude of our war-time plane production and the development of the atomic bomb, Mr. Truman would have us believe, would have been impossible "without the large blocks of power we used from the Tennessee and Columbia rivers"—hence Americans "must ever be grateful" to the late President Roosevelt for his "wisdom" and that of Congress in developing socialized electric power and transportation on these two rivers. The implication seems to be that, as broke as the taxpayers now are, they should be still further mulcted to develop power and navigation on the St. Lawrence, and that such action alone should enable us greatly to increase our output of planes and atomic bombs in the next war.

Such exposition may be good politics, but as economics or logic it is infantile. If the federal government had not developed so much economically-wasteful hydroelectric power, the private power companies would have developed more steam-produced power capacity than they did. We should have had the power in any event; the difference would have been that it would have cost the taxpayers less. And the navigation provided by these river developments succeeded only in weakening the effective railroads without providing an equally useful facility to replace them. Moreover, electric power was only one of many ingredients in plane production and in the development of the atomic bomb. The principal source of both weapons was the ingenuity, effort and capital of thousands of private businesses; and to seek to give the main credit to politics is either dishonest or foolish, depending upon the intellectual responsibility of the man who makes the effort.

In any event, when Mr. Roosevelt and his subservient Congress were gleefully pouring the taxpayers' substance into the Tennessee and Columbia rivers, they certainly had no foreknowledge of atomic bombs or an annual production of 100,000 planes. Even if these power developments were as great a factor in the supply of these weapons as Mr. Truman insists, the New Dealers do not deserve credit for "wisdom" for an action in which they engaged with quite another purpose in mind.

Even though the Columbia and Tennessee river developments were as helpful to the victory and as perspicuous on the part of Mr. Roosevelt as Mr. Truman contends—to conclude therefrom that the St. Lawrence project should go forward now would simply be another instance of indulging the military weakness of "preparing for the last war." Mr. Truman cannot know that a large reserve of electric power capacity will be of any use whatever in the next war—especially that provided in great concentration by large dams which are easy targets for bombers, and, if destroyed, take years to replace. If he could show that a large power reserve is a military necessity, then let him prove that the St. Lawrence project is the most economical way of providing that reserve.

The One Indispensable Asset to Military Safety

A large addition of high-cost power may or may not be a military asset in time of war—but there is one asset of the indispensability of which there can be no question whatever, and that is the possession by the nation of a vigorous, healthy, resourceful, inventive and multifarious private enterprise. This asset Mr. Truman is doing his best to tax out of existence and to destroy by subjecting it to unequal competition by the extension of socialization still further into transportation and power. Quite possibly it may be through ignorance that Mr. Truman is pursuing this course, but what may we say of its adoption also by Thomas E. Dewey, last year's Republican aspirant for the presidency, a man with educational advantages which President Truman missed; and of the fact that the leading contender for this venture in Congress is Senator Aiken, a Vermont Republican?

Mr. Truman reiterated the threadbare and discredited "cheap power" argument—as if it had not been repeatedly demonstrated that federal power is "cheap" by the operation of a process similar to that which makes whiskey expensive, namely, the intervention of the coercive power of the government to reduce the price of

the one by applying a subsidy and to increase the price of the other by heavy excise taxes. Wherever the government intervenes to any degree, a selling price thereafter bears little relationship to the actual "cheapness" of a product, or the contrary. If power can be produced and sold cheaply in large volume in excess of its cost of production (which is the only test which proves whether the venture will increase the national wealth rather than diminish it), then experience has demonstrated that private business will discover the opportunity long before federal bureaucrats ever hit upon it. If private enterprise has not developed electric power rapidly enough to suit the politicians, then only two explanations are possible: either politics has prevented it from doing so, or the projects do not actually give promise of paying their way and yielding a margin above costs.

Socialization Will Not Stop Here

If, nevertheless, the federal government is to be called upon to provide electric power and transportation because the electorate has been induced to vote itself more of these services than as users of them it is willing to pay for—then, of course, the next logical and probable step is for the electorate also to vote itself groceries, clothing and automobiles by the same process. If there is no principle to be observed to the effect that the people should support the government and not vice versa, then, obviously, the socialization of power and transportation is only the forerunner of a progressive extension of socialization to all commodities and services.

Mr. Truman has a reputation for sincerity of purpose which, not unlikely, he deserves; it is a quality of which Washington has never had an over-supply, and the dearth in which has been especially noticeable in recent years. But good intentions are not enough. The intentions of Louis XVI of France, who "appeased" the French revolution which finally cost him his head, were undoubtedly of the best, and so were those of Robespierre, at least initially; for all that the evidence so far available reveals, Emperor Hirohito also wished his people well.

Vacation-Bound

By next summer millions of discharged veterans and their families will have their minds on vacations. The average of six train trips for each soldier before sending him overseas was a considerable strain on the railways and railway equipment at the time, but it did give the "itching foot" to millions of men who might otherwise never have traveled more than a few hundred miles from their home towns. Next summer many of these men who caught glimpses of vacation spots from the troop train windows will want to go back for a closer look and a longer stay.

Thus, the summer of 1946 should produce vacation travel on a scale that will probably exceed in volume anything heretofore experienced. By then the vacation spots will have re-opened on practically a prewar basis. At present, the veterans are concerned largely with getting back to their home towns and enjoying the delights of "the fields they used to roam." If experience after World War I is any guide, by next summer they will want to be on the move again. There is no possibility that the automobile industry will be able to reconvert sufficiently to supply more than a dribble of private automobiles. Most of the veterans disposed of their cars before entering the army, and with the rapid deterioration of such cars as they may have, it is unlikely that many of them will want to risk long trips in them, particularly when the handicaps of the tire situation are taken into account.

Thus, in the vacation travel of 1946 the railways have an unprecedented opportunity to attract customers and to show a reasonable facsimile of what peacetime railway travel can be like. It is certainly not too early for passenger traffic managers to give consideration to this prospect, which may well have a bearing on the railway traffic of the future. The Milwaukee already has issued an attractive booklet entitled "Post-War Veterans' Victory Vacations." This booklet describes the attractions of the national parks and other vacation spots such as Montana dude ranches, and gives details of costs and other information in a handy fashion. It is also well illustrated. In view of the great potentialities of the vacation travel market, and the fact that for the next year at least the railways will have distinct advantages in attracting railroad travel by vacationers, special advertising attention to the veterans seems to be indicated.

Among the veterans of today are the business executives of a few years hence. Selling them now the use of passenger trains in preference to competing means of travel would not be just a one-time transaction but one which should promote continuing business in future years.

Starting from Scratch

The Diesel-electric locomotive, in both passenger and freight service, is being used in increasing numbers daily and on an increasing number of roads. Problems of achieving maximum economies in operation through maximum utilization of the hours in which these locomotives are available for service are being solved on different roads according to purely local conditions in most cases. One problem, though, that is common to all, and which is receiving much study on the part of all, is that of determining what kind of shop facilities are required for mechanical and electrical maintenance so that the locomotives need spend a minimum of time in the shops of their owners and a maximum in revenue-producing service.

Many of the basic procedures in maintenance have been substantially standardized and widely adopted insofar as deciding what work must be done and when it must be done in order to keep locomotives in service. Other problems remain to be answered because the total mileage potential of such locomotives is a long way from being reached on any railroad. Because these things are true it is equally true that the ideal arrangement for any maintenance shop must represent opinion rather than be a calculated design based upon an understanding of every need. On

most roads at present the question of determining where facilities should be located and how they shall be equipped is an active one.

Generally speaking, we are starting from scratch in deciding the question. Of 70 installations for the repair of Diesel-electric locomotives on which reports are available, 20 are located in new buildings, 32 in existing enginehouses, 13 in existing locomotive shops and 3 in existing car shops. Two are at outside pits adjacent to existing shop structures. The new installations should not be taken necessarily as representing in each instance a decision made that a new building and facilities were essential for Diesel locomotive maintenance; sometimes the operating territory in which they were placed in service had no adequate facilities of any type available. Nor can the use of existing shops at other points be used as an argument that new ones would not have had decided advantages. It is interesting, too, to note that of the shops mentioned nearly half were on three railroads whose Diesel ownership, switchers included, has a horsepower rating of only about one-tenth of the total horsepower represented in the equipment to be serviced by the 70 shops studied.

Obtaining full value from the dollars invested in Diesel-electric locomotive purchases depends upon more than achieving minimum repair costs and out-of-service time for repairs. But, the amount of money which must be spent on establishing shops will be so large as to add materially to overall Diesel costs and the expenditures thus far made on new or existing shops do not indicate any substantial agreement of opinion on anything except that facilities are needed.

Color Dynamics

Color dynamics, or color harmony in painting as it is sometimes called, now gaining acceptance in industrial applications, is pressing for entrance into the railway field. Will it be given the consideration that any such development warrants in the interest of improving working conditions, improving employee morale and increasing production, or will it be brushed aside as a fantasy of the paint industry in the sole interest of promoting sales?

Basically, color dynamics seeks to adapt the color harmony found in nature to man-made surroundings. It takes cognizance of the fact that some colors and color combinations, like some noises, or even music, are not only irritating and exhausting, but nerve-shattering as well. It gives consideration to the fact that some colors and color combinations tend to stimulate mental reactions while others tend equally to blunt and depress them; that some are more attention-arresting than others, tend to advance or recede more than others, have greater reflecting qualities, and, in themselves, are variously affected by different types of artificial illumination—all of which facts have been demonstrated conclusively by careful laboratory studies and medical research.

Applied to industry, whether in offices, laboratories or shops, tests have been equally conclusive. Practical applications made on a relatively small scale in industry shortly before the war led to a large number of applications during the war, which proved beyond doubt, to both management and personnel, that the proper selection and use of color for walls, ceilings, floors, machinery, furniture and other elements of building interiors, lessened eye strain and fatigue, reduced accidents, cut absenteeism, raised morale and increased production.

Railway men, in common with many men in industry, have much to learn about the proper application of color to building interiors. To some, the change will be a radical departure from preconceived ideas which, unknown to those who hold them, often produce results exactly opposite from those desired. To these and others, the color contrasts called for in the proper application of color dynamics are likely to prove a shock. However, to those with a basic understanding of the underlying principles involved, and with a sympathetic approach, the seemingly bizarre use of color passes quickly, leaving a pleasing restful effect.

To those who would make the test, they need go no further than the interior of one of the well-designed and decorated streamlined trains. If it is agreed that such color combinations as are used there are conducive to a restful, pleasing reaction on passengers, it should not be difficult to comprehend that similar or other appropriate color combinations would have a like beneficial effect on the same class of people when in passenger stations, and on employees in offices and shops, where the factors of lessened eye and nerve strain, and resulting lessened fatigue, have a natural corollary in a tendency toward fewer accidents and increased output with the same or less effort.

It is conceded that these principles in the use of color may be less easily applied in offices, stations and shops than within streamlined trains, but that is little reason for not investigating their possibilities fully, especially since an increasing number of applications under equally difficult conditions appear to be proving highly desirable and practicable.

More Uses for Aluminum

One of the brightest opportunities in industrial history for market expansion, an appreciable strengthening of national security and increased industrial employment is foreseen by the Surplus Property Board, in a recent report to the Congress, if the disposition of government-owned aluminum plants is carried out to develop a competitive aluminum industry. Federal government investment in the industry now totals approximately $739,000,000, and 82 per cent of it is in plants that cost more than $5,000,000 each. Government ownership comprises 52 plants, related housing, power facilities and equipment in 37 privately owned plants. It includes more than half the war-time capacity in alumina, primary aluminum, cylinder heads, extruded rods and bars and aluminum powder. Government ownership also represents a substantial capacity in the basic fields of sheets, rolled bars and rods, and forgings. Government investment accounted for the major portion of war-time capacity extending into practically every phase of aluminum production;

however, the report also points out that many government-owned plants are uneconomical and adds that they may be used for other industrial purposes.

Primary aluminum production in this country expanded six times during the war and employment in the industry leaped from 35,000 to 150,000, with 2,000,000 additional workers learning fabrication processes when the war ended. The United States possesses 40 per cent and Canada owns 26 per cent of the world's aluminum production capacity.

Many new and greatly expanded uses for the light metal are indicated by a canvass of industrial consumers if a fairly competitive price structure is developed. Possibilities for railway equipment, structures and appliances are attested by several new applications and by the results obtained after several years of service. For instance, we now find aluminum being used for many purposes on locomotives, including cabs, cab ventilators, streamlining jackets, casings for cylinder heads and steam chests, sand boxes and piping, smoke deflectors, covers for air compressors, conduits and fittings, skirting, running boards, steps and hand rails. Significant, too, was the completion and delivery early last spring of the first aluminum box cars with complete aluminum superstructures, including side frames, sheathing, ends, roofs and doors.

That aluminum has proved its practicability for railway equipment is evidenced by the service records of twelve additional aluminum streamlined trains since the first was placed in service in February, 1933. Equally impressive was the recent examination of a gondola car after more than seven years of continuous service, principally in transporting raw sulphur; its aluminum floor, sides and ends were reported in good condition.

In considering the absorption ability of markets the S. P. B. report points out that maximum economical production capacity of aluminum now is about five times greater than it was in 1939. Economical capacity is listed as 1,500,000,000 lb., 828,000,000 lb. of which is accounted for by Alcoa plants, 162,000,000 lb. by Reynolds and 512,000,000 lb. by government plants. Possible annual requirements in five years time are estimated as one billion pounds plus 600,000,000 lb. of secondary metal if prices of 12 cents and 6 to 8 cents a pound respectively are maintained.

Full Employment Plus General Poverty

In seeking to convince the electorate that without governmental action to increase "purchasing power," especially maximizing such "purchasing power" in the hands of industrial labor by coercive measures, business cannot be kept going at a prosperous level, the left-wing economists and politicians have a weapon which, if they are successful in procuring its acceptance, will profoundly affect the livelihood and living conditions of every American. It is, therefore, highly desirable that every literate citizen, in his own interest, make some effort to understand what it is these left-wingers are proposing in such measures as the Murray "full employment" bill. Familiarity with economic analysis, while helpful to such understanding, is not indispensable; a reasonable degree of inquisitive and critical common sense will suffice.

How "Purchasing Power" Is Created

"Purchasing power" has no real existence unless it is created by the production of goods and services. When goods or services are produced, purchasing power with which to buy them is simultaneously created, and free markets automatically move this purchasing power along to people who will use it to buy the goods which were produced when this purchasing power was created. For example, while an automobile is being manufactured, a sum equivalent to every cent of the entire prospective f.o.b. selling price—except the manufacturer's and dealer's profits—is paid out to those who have collaborated in producing it. If the car is actually sold, say, for $1000 at the point of sale, the dealer will get, perhaps, $100 of purchasing power; the transportation company which hauls it from factory to destination will receive, possibly, $75 of purchasing power; automotive employees may get $400; suppliers of materials another $300; and the owners of the factory $125—with the government taking from each of the foregoing recipients a generous slice of this purchasing power, and distributing it as purchasing power to government employees.

These figures are hypothetical, of course, but—however the $1000 is divided—every cent of it becomes purchasing power. Actual purchasing power can be created *only* in connection with production—because if people are given money when no additional production occurs, all that happens is that more claims to goods are issued than there are goods to match such claims. The result soon is an inflation of prices which makes it impossible for the people as a whole to purchase any more goods with any given amount of income.

The people who receive purchasing power as they contribute to the production of automobiles do not, of course, spend all this purchasing power for automobiles. Some of it they spend for food, which is how grocers and farmers get purchasing power with which to buy automobiles. Some of it they spend for fuel, thus putting purchasing power in the hands of miners and of railroad employees who haul coal so that they, in turn, have the purchasing power with which to buy automobiles. And so the process continues. So long as people want automobiles, the process of producing them automatically yields the purchasing power with which people can buy them.

Under free competition—with no monopoly and no government intervention—the economic process regulates itself. If any of the factors of production—labor, management or capital—get too large or too small a share of the total product, the resulting surplus or shortage of that factor will soon restore its share in the product to a rightful ratio. If too little of some product is produced, competition among many buyers for a limited supply forces up the price and induces increased production, which, in turn, pulls the price down. But when monopoly, either private or government-fostered, enters the picture, the frictionless and automatic operation of production ceases.

Suppose, for example, that there should be monopoly control of farm machinery and that prices of such equipment were fixed arbitrarily at a figure to yield a high profit to the manufacturer. Farmers could not afford to buy at these prices all the farm machinery that could be produced, and so the amount produced would be restricted. As less of it was manufactured, less purchasing power would be paid out to employees and suppliers of raw materials in implement manufacture, and, consequently, still less purchasing power would flow back through the channels of trade to farmers, possibly still further curtailing their ability to buy farm machinery and other products of industry. Curtailment of use of machinery on farms would increase the cost of producing farm products and thus lower the general standard of living. Everybody else in the country would be worse off because a few monopolists were allowed coercively to establish prices of their product at an exorbitant level. Similar monopolistic fixing of prices or wages anywhere in the economic system has a parallel depressing effect on the whole economy.

Bureaucrats Always Seeking More Power

The answer of economics, to depressions and poverty is, thus, the elimination or regulation of monopolies and all other coercion which prevents the automatic corrective action of free markets. If monopolistic coercion were eradicated from the economic machine, the mechanism would correct its own ills, without calling for the services of any bureaucratic master-minds. At this juncture, however, the "interventionist" and "purchasing power" economists and politicians enter the stage from the left, with a wholly different prescription. What they say, in effect, is this, when stripped of the verbal camouflage with which it is adorned to make it politically palatable:

"The monopolies we have, especially monopolies of labor, are politically too strong either to be suppressed or effectively regulated. We grant you that, by their coercive pricing of their services or products at high levels, they induce unemployment and poverty. But give the government unlimited power to spend and to tax and the economy can be kept going at high speed, despite these monopolists. If the lack of prospective profits discourages investment in non-monopolized industries, let the government put up the necessary capital for these industries and 'public works,' and recoup itself by taxation of the monopolized industries and labor whose profits and incomes are excessive.

"Let us talk about putting more 'purchasing power' in the hands of industrial employees, thus winning their votes; we can take back all this extra 'purchasing power' from them later in high income taxes. Instead of regulating or destroying the monopolies which are preventing prosperity, let us subject all these little monopolies to a government monopoly with unlimited power to spend, to tax, and to change people's incomes wherever our superior wisdom may judge such changes are desirable."

Quite likely the scheme of these "interventionist" and "purchasing power" proponents will work, provided government authority is extended into every part of the country and every part of the economy. Monopolistic wage levels and industrial prices placed the farmer at a disadvantage which was politically dangerous, so the government stepped in in the '30's with control of agricultural production and prices—with the result that every county seat now has an office full of employees on the federal payroll.

Retail trade and the professions are not, so far, aided by governmental efforts to increase their purchasing power—which places persons so engaged at a disadvantage compared to organized labor and agriculture which are receiving this assistance. Retail trade and the professions have, however, a lot of votes and doubtless, in due course, will get federal protection if it is continued for labor and agriculture—with the addition of, perhaps, another couple of million commissioners, clerks and catchpoles to the public payroll. As Germany and Russia have demonstrated, an all-powerful bureaucracy can make the economy work so that nobody has a chance to be idle, if the people are willing to pay the price in wages of, perhaps, ten million federal employees, and in the loss of individual liberty.

For political purposes, these "purchasing power" and "interventionist" demagogues make much of the desirability of getting a larger share of total purchasing power into the hands of industrial employees. The popular explanation is that recipients of wages spend their money and thus provide markets for the products of industry, while money paid to stockholders and bondholders is not spent but is hoarded and thus provides no market for goods. This is a disingenuous argument, the mischievous untruth of which is doubtless well known to all who utter it.

"Profits" Are "Purchasing Power" Too

If an owner of securities does not spend his entire income—he invests what he does not spend, just like everyone else. He may either put such savings in a bank, which invests them for him, or he may purchase additional stocks and bonds, which means that his purchasing power goes to buy machines and facilities with which to increase or economize production, and his purchasing power thus passes into the hands of people who make such products and they, in turn, are enabled to purchase consumers' goods with it. Money paid out as profits goes to make a market for the products of industry, just as much as does money paid out in wages. If it were not for such profits, there would not be any purchasing power at all in the hands of the workers who make locomotives and machinery and industrial buildings—unless it were doled out to them by the politicians from taxes, which is undoubtedly the goal at which the "interventionists" are aiming.

Even the industrial and labor monopolists whose practices make an excuse for—and lend plausibility to the arguments of—these "interventionist" and "purchasing power" politicians might be better off in the long run to forego the practices that maximize the power and expense of government, because a monopoly is an advantage only when monopolies are few. When an individual can get a monopoly price for his own products or services while continuing to do his buying in a free competitive market, he has an advantage; but when he too is forced to pay monopoly prices for everything he buys, then the relative advantage he enjoyed as a monopolist disappears.

He is right back where he started from in a free market—that is, on a par with everybody else; but with the disadvantage of having to pay taxes for a mountain of governmental service from which he was free before monopoly practices began.

Corrosion Tests Yield Interesting Data

Thousands of specimens of metals, alloys and coatings studied at Kure Beach—Methods of timber preservation also investigated to determine resistance to marine borers

AT Kure Beach, N. C., on the Atlantic Ocean, two miles south of Carolina Beach, extensive corrosion tests of various metals, alloys and coatings have been conducted for periods varying from 5 to 10 years. These tests include samples exposed to sea air and samples completely immersed in sea water. In addition, during the past two years, various specimens of treated wood have been submerged in sea water to determine the resistance to marine borers afforded by different types of treatment.

This study, said to be the most comprehensive ever attempted on a practical scale, has been conducted jointly under the auspices of the International Nickel Company, the Carnegie-Illinois Steel Corporation, and the Magnesium Division of the Dow Chemical Company, at a site near the Ethyl-Dow Chemical Company plant at Kure Beach. At the present time approximately 15,000 specimens are being exposed to sea air. About 1,500 specimens of metals and alloys and an equal number of specimens of treated wood comprise the submerged tests, while about 4,000 such specimens and about 5,000 specimens of treated wood have been tested to date.

In addition to the sponsoring companies, a number of technical societies and approximately 200 other companies have participated in the project by submitting samples or groups of samples for comparative tests. Data obtained are freely exchanged and by such means opportunities have been provided over a period of years for the simultaneous study of the behavior of materials and coatings in a great variety of compositions and forms, when subjected directly to salt water corrosion and to salt-laden atmosphere. The background of information which has been accumulated by this co-operative research, when interpreted in the light of practical experience with materials now in use, should be a particularly valuable guide in the proper application of new and improved materials in future.



In the Atmospheric Test Lot, Showing Part of the Test Frames

Atmospheric Tests

The atmospheric test racks are located in a lot about one acre in area, where about 15,000 specimens are exposed. This lot is located about 800 ft. from the ocean shore, far enough away to provide uniform salt-air conditions throughout the test racks. In addition, a test stand is located about 80 ft. from the ocean where specimens are subjected to a continual mist of salt water spray and occasionally are splashed by the breakers. The racks in the lot face south and the specimen frames are set at a slope of 30 deg. from the horizontal, while the sea shore test stand faces east, toward the ocean. The atmospheric test racks are constructed of Monel metal or 18-8 stainless steel, and the specimens, except in the case of special studies of galvanic corrosion, are supported by porcelain insulators, free of contact with any other metal.

Effects of atmospheric corrosion are measured by visual observation and by determinations of weight loss, changes in mechanical properties, or both. The test frames, with their insulators, may be made to accommodate several types and sizes of specimen. Usually a sufficient number of specimens are exposed originally to permit their withdrawal in groups of 2 to 5 (most frequently 4) after various time intervals to permit observations of changes in corrosion rates with time.

Key Specimens

New specimens of certain key materials are put on the racks each time a large group is removed, or a new group



Close - Up of Atmospheric Racks, Showing a Variety of Types of Test Specimens

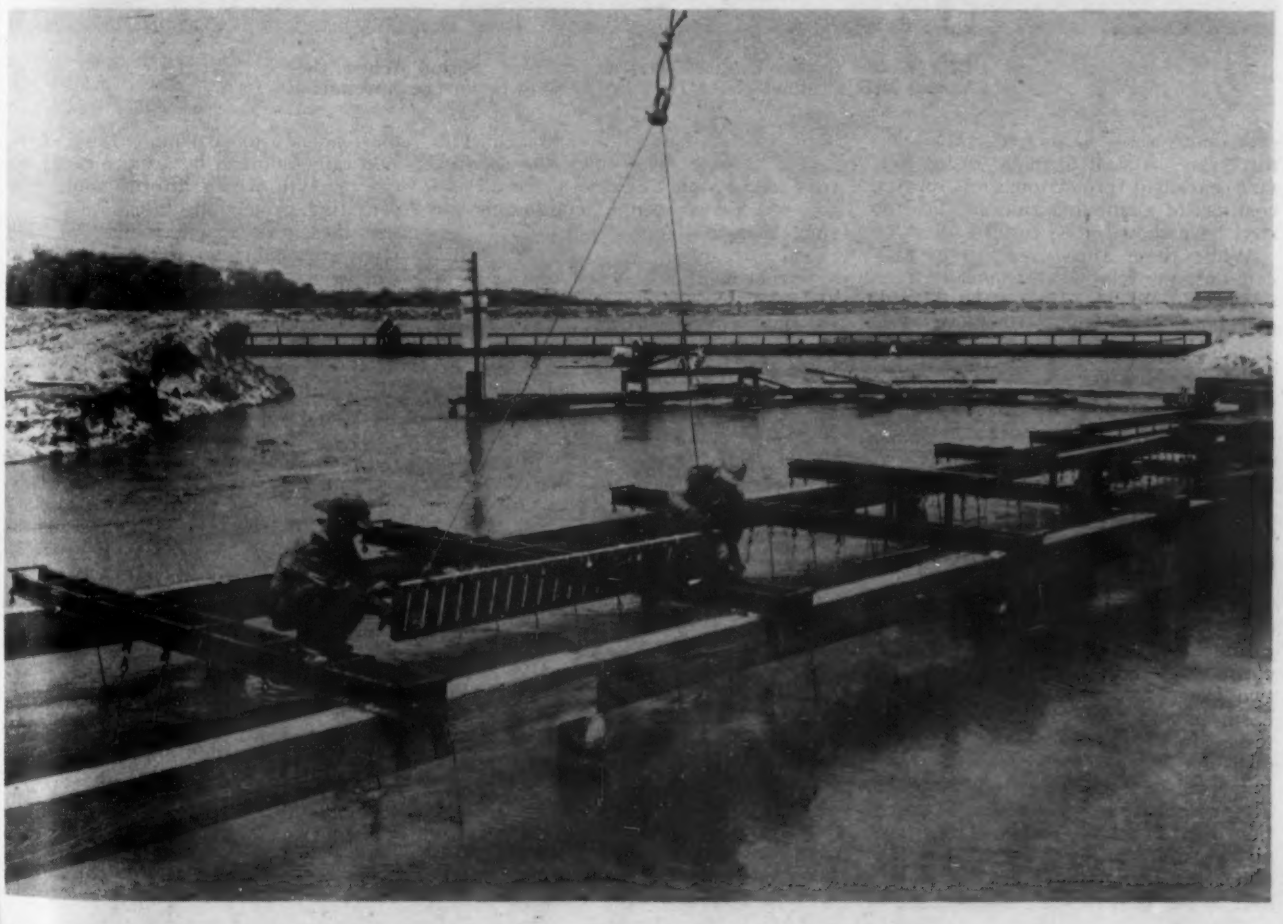
is installed. These key specimens provide information on changes in the corrosivity of the atmosphere itself from year to year, which assists in the interpretation of the results of tests made over different time periods. In the atmospheric test lot, one large group of about 1,500 specimens of different steels is distributed over the racks at random to discover any possible effects of rack position on the results obtained. So far, no such effect of position has been observed.

Briefly, the atmospheric tests show that magnesium, aluminum, copper sheet, Monel metal, other high-nickel alloys, and chromium-nickel stainless steels such as are used in streamlined trains, are very corrosion-resistant in salt-laden atmospheres. Only three or four metals have been shown to be effective in improving the resistance of iron to such corrosion. Copper, nickel and chromium are most effective in this respect, while copper and nickel together are more effective than either one separately, and phosphorus is beneficial when included with one or more of the other three elements.

There is a considerable improvement of the corrosion resistance of steel as its copper content is increased to about 0.05 per cent. On the other hand, more than 0.05 per cent of copper apparently has relatively little further beneficial effect and for greater corrosion resistance it is necessary to add nickel or chromium or both.

The tests indicate that hot-dip galvanized and aluminum coatings provide excellent protection of iron or steel against salt-laden atmospheres. The amount of protection provided by a galvanized coating is almost exactly proportionate to the thickness of the coating, since the deterioration or disappearance of this

In the Water Exposure Tests, the Specimens Are Hung on Metal Racks and Are Insulated from the Racks and Each Other





Under-Water Racks Exposed During a Brief Period When the Channel Was Drained—Note the Marine Growth on the Specimens

protection seems to progress at a uniform rate. Baked phenolic resins provide excellent protection and sprayed coatings of aluminum, zinc and lead on steel have shown good results.

While these atmospheric tests indicate only the relative resistance of variout metals, alloys and coatings to salt-air corrosion, they should also be of great help in determining comparative resistance to other types of atmospheric corrosion, since in most cases the relative resistance of metals is much the same in industrial atmospheres as in salt-laden atmospheres.

Sea-Water Tests

The submerged tests are conducted at one end of a large reservoir of sea water near the intake channel to the Ethyl-Dow Chemical Company plant. This channel, with its continuous flow of clean sea water at a velocity of about two feet per second, provides an ideal basin in which to carry out corrosion tests. In these tests most of the specimens are exposed on racks continuously immersed at a depth of from 3 to 4 ft. The racks themselves, with the exception of a few provided for certain special tests, are made of Monel, or of an alloy which contains 70 per cent copper and 30 per cent nickel. Racks made of both of these alloys are welded with Monel rod and the specimen-supporting rods are of Monel. Some of these racks and rods have been in continuous use since 1935, and appear still to be as serviceable as ever.

Specimens are fastened to the racks by means of Monel machine screws and galvanic effects are prevented by the use of bakelite insulating tubes over the bolt shanks and by insulating washers between the specimens and the racks and Monel washers under the bolt heads. The efficacy of this method has been demonstrated by the absence of galvanic action on specimens of such materials as magnesium, aluminum and zinc-coated steel.

The period of exposure of a group of specimens may vary from six months (rarely less) to several years and some specimens have been immersed for as long as nine years. The number of specimens exposed varies from about 1,000 to 1,500, depending on the nature of the investigations in progress. The fouling of specimens with marine growth is a factor which controls corrosion to some extent and it is of interest to note that, possibly because of this, corrosion of steel and many other alloys in sea water all over the world has been found to occur at remarkably uniform rates. In warmer climates, with warm sea water, the tendency toward more rapid corrosion rates is offset by a more rapid marine growth which affords some compensating protection.

In these tests, magnesium alloys, while fairly resistant, were corroded somewhat more than in the atmosphere. Carbon steel had a relatively rapid corrosion rate. The most inert alloy was Hastelloy C, which showed no corrosion whatever after 2,217 days of exposure. Monel, the cupro-nickel alloys, and all the common tin bronzes, were also very resistant to corrosion. Zinc, as galvanizing on steel, provided good protection on immersed samples with an indicated life of about one year for a one-ounce coating (0.5 oz. of coating per square foot of surface covered). When completely submerged in salt water, low-alloy high-tensile steels corrode about as much as ordinary steel as measured by weight loss, except that they do not pit nearly as much.

A study of the marine growth anti-fouling characteristics of metals, alloys, plastics and protective coatings has been an important phase of research during the past few years. This phase of the investigation has been conducted jointly along with the sea-water corrosion tests. Copper has proved to have the best anti-fouling characteristics, due to a toxic effect of copper compounds or to the

continual sloughing off of corrosion products, or to a combination of both effects. To prevent fouling, copper or any copper alloy must corrode so as to release copper at a rate of about 5 mg. per sq. in. per day which, in the case of pure copper, is equivalent to a penetration of 0.001 in. per year.

To obtain more precise information on the ability of alloys to withstand the severe erosive effects of sea water at greater flow speeds, associated with such marine uses as condenser tubes, pump impellers and propellers, an erosion testing apparatus was constructed, consisting of a large submerged Monel disk on a vertical K-Monel shaft with a motor and gears to drive it.

Specimens are fastened to this disk and whirled in the sea water at velocities up to about 30 ft. per sec., depending on where the specimen is placed relative to the center of the disk. All specimens are insulated from the disk and from each other. As the disk revolves, salt water rushes through the test pieces under conditions of great turbulence so as to result in severe erosive effects.

In these tests, the destructive effect on vulnerable materials has been so great as to result in as much erosion in a couple of months as ordinarily would be encountered in as many years. Thus this apparatus gives every indication of providing an unusually reliable and practical guide to the actual service which can be expected from materials proposed for use in sea water at high velocity.

On the beach, in bulkheads protecting an inlet for the reservoir pumping station, 36-ft. I-beams and sheet piling have been driven 20 ft. into the ocean bottom, leaving 16 ft. partly in the water and partly in the air. The purpose of these tests is to check the merits of carbon and low-alloy steels under tidal conditions nearly identical with those of actual waterfront bulkheads or structural steel piling. In this test, the progress of corrosion is determined by periodic measurements of the decrease in thickness of the steel.

This test has already yielded interesting information about the distribution and extent of corrosion of the steels above and below the water and in the region betwen high and low-tide levels. In general, the use of low-alloy steels, when completely submerged, is not justified economically, as compared to carbon steel.

If the structure is only partially or intermittently submerged, as in the case of piling, however, the greater resistance of the low-alloy steels to atmospheric corrosion becomes of benefit.

Tests of Treated Wood

Tests of treated wood were started several years ago to determine the effect of all kinds of chemical treatments, coatings, etc., in protecting the wood against destruction by such marine borers as Limnoria and Teredo. Timbers 18 in. long, 3 in. wide and 1 in. thick, are placed on racks and are completely submerged in the reservoir, with one edge facing the current. At the present time, the test comprises about 150 racks with 40 specimens on each rack. More than 5,000 specimens have been tested to date, including all kinds of chemical treatments, coatings, etc., on more than 250 types of timber. So severe are the marine borer conditions at this location that many samples completely disappear in one season.

To date, the results of these tests indicate that none of the treatments except creosote and creosote-coal-tar mixtures has permanent value against both Teredo and Limnoria. To get good results with creosote and creosote-coal-tar mixtures, the wood must be impregnated with 20 lb. or more of creosote per cu. ft.; with only 10 lb. per cu. ft. of impregnation the sample lasts only about five years. Singularly, wood treated with creosote-petroleum mixtures gave unsatisfactory results from the standpoint of protection against marine borers.

The Kure Beach sea-water corrosion testing station was established by the International Nickel Company in 1935, and the Dow Chemical Company and the Carnegie-Illinois Steel Corporation have co-operated with Inco in making the tests. F. L. LaQue, in charge of the corrosion-engineering section of International Nickel, has directed the project from the beginning. The tests on magnesium alloys have been under the direction of J. A. Peloubet, development engineering, Dow Chemical Company, and Ewart S. Taylerson, research engineer, has represented the Carnegie-Illinois Steel Corporation. The anti-fouling tests and the tests of treated wood have been made in co-operation with William F. Clapp of the William F. Clapp Laboratories, Duxbury, Mass.



The Erosion Testing Disc Exposed While the Reservoir Was Partially Drained

Warns Shippers on Transport Socialism

Metzman urges "long view" on tax-built facilities—What the shipper "saves" in rates he pays for in higher taxes, while socialization, thus nurtured, menaces all free enterprise

GUSTAV METZMAN, president of the New York Central, on October 4, in an address to the Atlantic States Shippers Advisory Board at New York, asked shippers to take the "long view" in calculating their self-interest in the growing socialization of transportation, to the detriment of that part of transportation which is financed wholly by private capital.

"In each situation," he said, "there is a short view and a long view. For example, a shipper may directly or indirectly take advantage of government-supported transportation facilities to secure a lower transportation cost. In the short view, he has made a saving.

Rate "Savings", Higher Taxes

"As a shipper, he is not paying for those 'free' facilities. Yet as a taxpayer he *does* pay for them—not only through his corporate taxes, but through the personal taxes he pays on his house and his income. And as a seller of goods, he also pays for those 'free' facilities through smaller orders from his tax-burdened customers. That is the long view, and the true view.

"Our competitive system of private enterprise is the cornerstone of the kind of nation we want to have. We cannot long have personal liberty without free enterprise and competition. We need private enterprise and competition in transportation, just as much as we need it in other industries. Transport competition today is governed only in part by economy and efficiency. A major factor, and in many cases the controlling factor, is the employment of public funds. The carrier who uses public facilities, without paying an adequate charge for their use, enjoys an advantage which a competitor, depending entirely upon private capital, cannot hope to overcome.

"This problem of public funds represents America's Number One transportation problem today. It may appear to be in the interest of the operator of barges, trucks or airplanes to seek a maximum of public expenditure for facilities that he can use, and to seek to pay as little as he can get away with for their use. That is the short point of view. But in the long run that will not do him very much good, if the result is to socialize transportation.

"It would be entirely possible for the competition of tax-subsidized transportation so to undermine America's railroads that the government would have to take them over. And if that happens, I think it is fair to say that before long all other forms of transportation would also pass into government hands, or else be so restricted in their activities that substantially all freedom would be taken from them.

"I suggest that the long view, both from the standpoint of the shipper and from the standpoint of the carrier engaged in any form of transportation, is to seek means whereby private funds invested in railroads can live alongside public funds invested in highway, water and air facilities. This is partly a problem of user charges—of making public transport facilities self-supporting. It is also a problem of taxation. Railroads which pay taxes upon their rights of way and other facilities contribute very substantially both to the general support of government and to the special support of their competitors. By contrast, carriers which operate over public 'ways' very often do not pay anything that corresponds to what the railroads pay on their fixed properties.

"For example, the New York Central is one of the largest taxpayers in the city of New York. It is therefore one of the largest contributors to the city's new 200-million-dollar airport. The railroad is also one of the largest taxpayers in the state of New York—and thus one of the largest supporters of the state's tax-consuming barge canal.

Too Much Tax-Free Property

"This tax problem is one of discrimination between privately-owned tax-paying business properties and publicly-owned, tax-exempt properties that are used for business purposes. In the city of New York, the total of assessed valuations is about 21 billion dollars. Of this 5 billion 400 million dollars, or about 25 per cent, is exempt from taxation. Some of the exempt property represents churches, schools, parks and charitable institutions—things generally regarded as properly tax exempt. But an increasing proportion of it represents business facilities—airports, subways, docks and the like. Here, tax-exempt public property is directly competing with tax-paying private property. This is a problem for every taxpayer—and this includes every tenant who occupies tax-paying property.

"When a shipper uses railroad transportation, he is paying his way—and even lightening his other tax burdens, because part of his shipping dollar meets railroad taxes. When a shipper uses 'free' government transportation facilities, he still pays his way—*plus*—in hidden additions to his own tax bill. And while paying his way, he also paves the way for socialization that may eventually destroy his own business.

"If we take the long view, each of us considering his long-run common interest in sound transportation as paramount to more conflicting short-run interests, where does it leave us? Could all the interests sit down at the table and discuss, for example, the level of charges which highway users should pay for operating over public highways? We could talk about the question but I do not believe we could reach a satisfactory conclusion.

Too Few Agreed-upon Facts

"In seeking the solution of this problem, I think we must have facts about which all parties can agree. The difficulty is that we do not have enough of such facts. Some of us in the transportation field have made studies, but it is only natural that the disinterestedness and impartiality of our findings should be doubted. How can we secure enough disinterested facts so that we can hope to remove America's Number One transportation problem from the field of political controversy?

"The kind of study which the country's important users of transportation, individually and through organizations, are giving to this question is most constructive. The Shippers Advisory Boards, as after the last war, have a job ahead of them, in helping our elected representatives to get the facts about transportation. The Traffic Clubs, the National Industrial Traffic League and other shipper organizations have a job ahead of them, too.

"At the present time, Congress is aiming at a thorough study of transportation. You have heard about the Lea Resolution (H. R. 318, the McFarland Resolution (S. Res. 161) and the Mead Resolution (S. Res. 168). These will probably result in the most comprehensive job of impartial fact-finding which has been undertaken since highways and airways entered the transportation picture. The user of transportation is a sort of umpire. His interest is most truly the public interest, because he wants more and better transportation at the lowest possible *real* cost. And if that interest can be made to shape public policy, it will assure the kind of con-

structive competition in the transportation field which we on the railroads will welcome, and which can yield the greatest benefits to the nation."

National Transport Policy

The speaker praised the work of the Shippers Advisory Boards, and the cooperation among them, the railroads, the armed services and other government agencies—which forestalled during the recent war such conditions as in World War I led to government operation of the railroads. He reminded his audience of the indispensability of efficient transportation to the industrial performance required in the national defense; and looked forward to continued co-operation by organized shippers in the solution of problems which lie ahead. The 1940 Transportation Act, he said, contains "a good declaration of policy," but one which is as yet inadequately implemented in federal and state legislation.

The system of carrier regulation under the Interstate Commerce Commission he characterized as "the very basis for harmonious shipper-carrier relations"—and warned that this system "is now jeopardized by anti-trust prosecutions." He urged support of the Bulwinkle Bill (now pending in Congress, which would legalize the "bureau method" of rate-making, and otherwise make it plain that the I. C. C. and not the Justice Department is the agency to which Congress has entrusted the duty of regulating transportation).

In introducing the speaker, Board Chairman J. A. Quinlan (vice-president, St. Regis Paper Company) commended the railroads for their war-time performance, "the transportation miracle of the age"; without which V-E Day and V-J Day "would not have happened in such rapid succession." And, he added, "had it not been for the Advisory Boards, already organized and ready to jump to the task when the war broke out, the result might have been different." The work done by the Shippers' Boards, he added, "helped in no small measure to keep the railroads in the hands of the owners and under private management. The Board is unalterably opposed to federal control or ownership of railroads at any time. We are squarely behind the Bulwinkle Bill and shall do all in our power to secure its passage at this session of Congress."

Post-War Traffic Changes

Chairman W. C. Kendall of the Car Service Division told the Board that "there has been some decrease in traffic volume, but not to the extent that some had predicted." Continuing, he said:

"The channels of movement under the programs of reconversion will vary somewhat from those of the war period, which will require some readjustments by railroads of the operating practices to which they have been accustomed. There will likely be some changes in the direction of traffic flow. One change is in the flow of war material to the ports. This traffic has practically ceased. Continuing for a time will be the return movement through these ports of Army and Navy materiel from the various theatres of operation overseas. These shipments will largely be distributed in the reverse of the outward movement for overseas.

"The railroads may reflect upon the reputation they have established as to their stability in the industrial world. Whether in the period of economic depression such as was experienced during the 1930's, or in the prosperous periods of more recent years, they have, at all times, carried on without assistance and without subsidies of any kind. They have had to make their own way unassisted from any public sources. Following the period of government control in World War I, the taxpayers of the nation were called upon to contribute millions of dollars to make up deficits in railroad operation; to the contrary, in the war years of 1942-1945, they have contributed to the public treasury hundreds of millions of dollars in taxes—the reverse of the situation during period of government control.

"Some of this successful rail operation during recent years may be attributed to the improvement in the art of transportation. There are several units which may be cited which are illustrative of these improvements. During 1918, the average number of miles per car per day was 26.1; in 1940, 38.9; in 1944, 51.9—practically double the speed of handling during 1918. Another example—the tons per car in 1920 were 34.5 and in 1944, 40.3. The shippers of the country have been largely responsible for making this improvement possible, though the railroads have done their part by making cars of higher capacity available for loading. The length of haul, carload traffic, in 1918 was 297 miles; in 1940, 351; in 1944, 473. The last figure is doubtless the peak, for much of the long-haul traffic was directly traceable to the war effort.

"Freight cars, passenger cars, locomotives—all have been available in greatly reduced quantities for the transportation load as compared with earlier periods, which so far as freight is concerned has doubled, and passenger service quadrupled since the years when equipment and ownerships were at their peak. The present freight car ownership is believed adequate for the post-war transportation requirements except that there may be some deficiencies in some categories—that is, new uses have been found during the war period for various types of cars which has made the problem of distribution among shippers somewhat more difficult. As replacements are acquired, adjustments in these ownerships will be worked out.

"Replacements of freight cars will likely be on a basis of maintaining the present level of ownership. The development of passenger transportation has been such that new types of cars will be brought into service in increasing numbers. The passenger train of tomorrow will differ materially in its make-up from the present. The railroads are ordering new freight cars consistent with current requirements. As of September 1, there were 38,249 on order. There are approximately 1,200 passenger cars on order.

"At the present time, the railroads are in the midst of the annual program of moving the huge agricultural crops, which this year are larger than ever. The outturn of wheat will be about 1,152 million bushels, an all-time high, compared with a ten-year average of 789 millions; corn, 3,069 million bushels, compared with ten-year average of 2,433 million bushels; soy beans, 202 million bushels, compared with ten-year average of 87 million; oats, 1,575 million bushels which tops all records, and is 47 per cent above the ten-year average.

"While it may be thought that changes in the industrial situation will greatly reduce the requirements for coal, the railroads will be called upon and will be able to transport all the coal which the mines will produce. There will be a market for this production, whatever the total of that production may be. The growers of fruits and vegetables have been importuned to develop an ever-increasing crop of their products. They have responded to these requests in such manner that the availability of refrigerator cars to meet requirements constitutes a major problem. So far, there have been only slight and scattered shortages, but the demands for this type of equipment is increasing."

The commodity shipments forecast in Atlantic Board territory for the fourth quarter of 1945 estimates a decrease of 4.1 per cent under the total loadings in the fourth quarter of 1944.

* * *

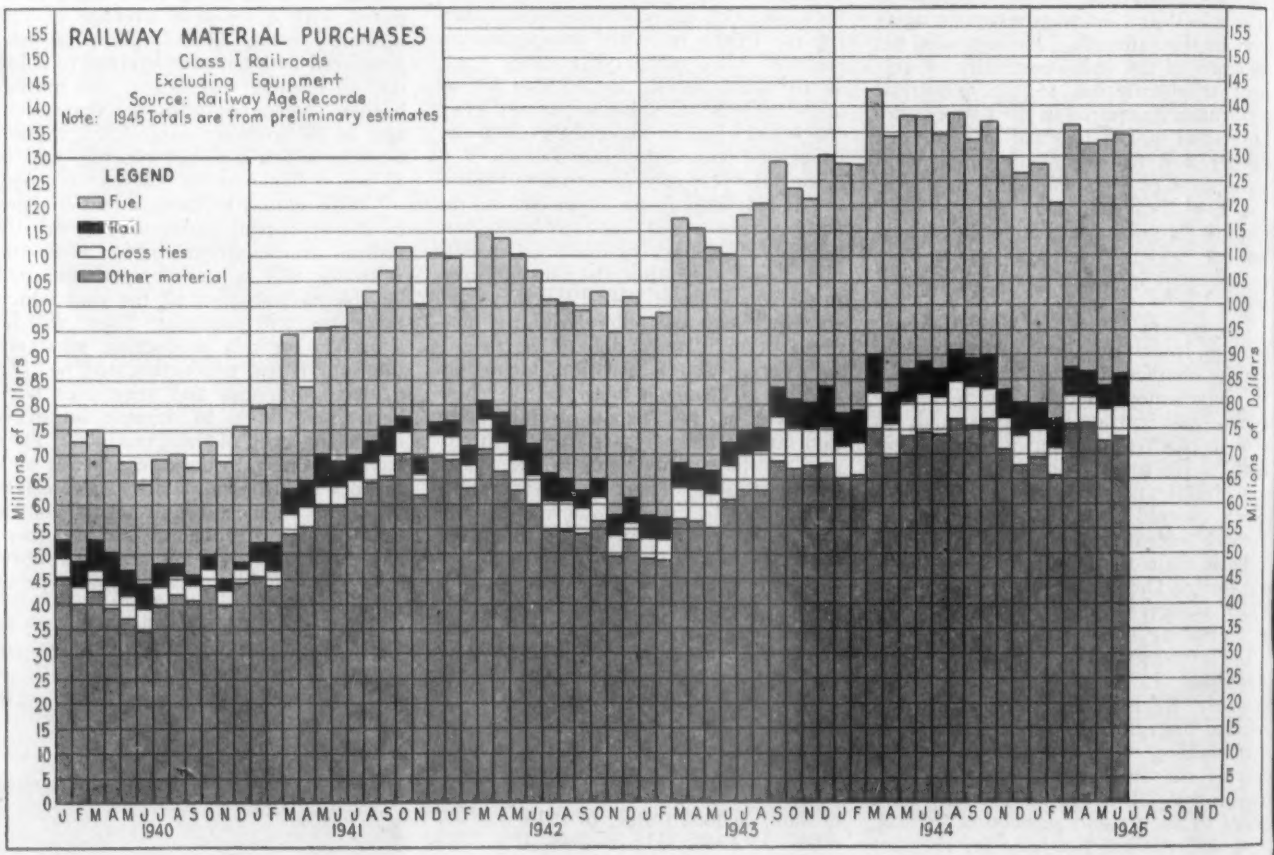


N. Y. C. Tribute to Veterans

At the recent dedication in Grand Central terminal, New York, of the bronze honor tablet for the 31,000 New York Central employees who served in the armed forces during World War II, were a throng of patrons, company officers and members of the Metropolitan Chapter of the Veterans Association of the N. Y. C. System—From left to right are: John Bachran, yard engineman; H. A. Offerman, trainmaster and president of the veterans' association; L. W. Horning, vice-president, personnel; and E. W. Kinsley, office assistant to assistant comptroller, and secretary-treasurer of the veterans' association.

Material Buying Dips in First Half

Railway purchases of supplies and fuel show slight recession after V-E Day but large volume continues and reaches $785,429,000 for the six-months period



Railway Purchases for First Six Months 1941-1945 Class I Roads

Miscellaneous Materials and Supplies—In Thousands

	1945*	1944	1943	1942	1941
January	$69,209	$64,987	$49,000	$68,988	$45,387
February	65,715	65,693	48,407	63,148	43,400
March	75,634	75,033	56,911	71,103	53,988
April	75,715	69,337	56,412	66,409	55,377
May	72,539	73,446	55,170	62,812	59,412
June	73,601	74,351	60,923	59,822	59,597
First Half	$432,413	$422,847	$326,823	$392,282	$317,161

Crossties—In Thousands

	1945*	1944	1943	1942	1941
January	$5,722	$6,895	$4,037	$4,871	$3,434
February	5,576	6,675	4,530	4,814	3,475
March	5,659	7,370	6,481	6,100	4,042
April	5,769	6,745	6,625	6,143	4,317
May	6,623	7,410	6,758	6,156	4,321
June	6,270	7,589	6,826	6,138	4,025
First Half	$35,619	$42,684	$35,257	$34,222	$23,614

Fuel—In Thousands

	1945*	1944	1943	1942	1941
January	$48,452	$50,341	$39,883	$32,851	$27,254
February	43,916	50,041	41,542	31,991	27,894
March	49,173	53,277	49,297	34,025	31,113
April	46,198	51,655	48,369	35,230	19,198
May	49,274	51,039	44,991	34,701	25,544
June	48,846	49,706	38,019	35,290	27,331
First Half	$285,859	$306,059	$262,101	$204,088	$158,334

Rails—In Thousands

	1945*	1944	1943	1942	1941
January	$5,072	$6,423	$4,811	$3,071	$3,459
February	5,273	6,264	4,340	3,813	5,289
March	5,776	7,700	4,718	3,766	5,160
April	4,971	6,175	4,181	5,827	4,850
May	4,585	6,188	4,599	6,637	6,186
June	5,861	6,508	4,584	5,829	4,861
First Half	$31,538	$39,258	$27,233	$28,943	$29,805

Total Materials and Supplies (Less Fuel)—In Thousands

	1945*	1944	1943	1942	1941
January	$80,003	$78,305	$57,848	$76,930	$52,280
February	76,564	78,632	57,277	71,775	52,164
March	87,069	90,103	68,110	80,969	63,190
April	86,455	82,257	67,218	78,379	64,544
May	83,747	87,044	66,527	75,605	69,919
June	85,732	88,448	72,333	71,789	68,483
First Half	$499,570	$504,789	$389,313	$455,447	$370,580

Total Material, Supplies & Fuel—In Thousands

	1945*	1944	1943	1942	1941
January	$128,455	$128,646	$97,731	$109,781	$79,534
February	120,480	128,673	98,819	103,766	80,058
March	136,242	143,380	117,407	114,994	94,303
April	132,653	133,912	115,587	113,609	83,742
May	133,021	138,083	111,518	110,306	95,463
June	134,578	138,154	110,352	107,079	95,814
First Half	$785,429	$810,848	$651,414	$659,535	$528,914

* Subject to Revision.

ALTHOUGH railway purchases of fuel, materials and supplies (excluding equipment) by the Class I railroads of the United States receded slightly during the first six months of 1945, nevertheless, these purchases continued at a high level and amounted to $785,429,000, or a decrease of only 3 per cent compared with $810,848,000 during the first six months of 1944, according to *Railway Age* estimates that are based on special reports received from the carriers.

Perusal of these estimates and the accompanying graph indicate that the general easing of railway buying began during the first quarter and continues to manifest itself in appreciable reductions in several categories. Purchases during the month of June also reflect the reaction following V-E Day and the end of the war in Europe. Regardless of these influences however and the scarcity of many products, the high volume of purchasing is evidenced by the fact that the total purchases of all materials and supplies, excluding fuel, but including all materials used for the maintenance of equipment and fixed property, amounted to $499,570,000 for the first half of 1945 or only 1 per cent less than the $504,789,000 total for the same period in 1944. However, this year's purchases for the first six months exceeded those of 1943 by 28 per cent; they were 10 per cent greater than those of 1942 and 35 per cent larger than similar expenditures during the first half of 1941.

Because of the fact that many items of stores stock regularly required for the general maintenance of equipment and fixed properties are in better supply and because of the easing and abolition of many governmental controls, the purchase of miscellaneous materials and supplies during the first six months of 1945 amounted to $432,413,000 or 1 per cent *more* than the $422,847,000 total of last year. Compared with 1943, the purchase of these items during the first half of this year showed an increase of 32 per cent; they were 10 per cent greater than during the comparable period in 1942 and exceeded the first six months' purchases of 1941 by 36 per cent.

Expenditures for crossties reflect the great scarcity that was induced largely by lack of an adequate pricing policy and the preference that was accorded lumber of the same species during the war.

During the first half of this year the railways spent $35,619,000 for crossties or 17 per cent less than the $42,684,000 spent for the same purpose during the first six months of 1944. However, this year's expenditures were 1 per cent greater than during the first half of 1943, 4 per cent more than during the comparable period in 1942 and 51 per cent more than for the first six months of 1941.

Expenditures for rails during the first half of 1945 showed a drop of 20 per cent compared with the same period of 1944 and amounted to $31,538,000 which incidentally topped 1943 expenditures by 16 per cent, exceeded those for the

Railway Purchases of Miscellaneous Materials and Supplies for Maintenance of Cars, Locomotives, Roadway and Structures (Excluding Rails, Ties, Fuel) for First Six Months

	Mileage	1945	1944	% Change
Akron, Canton & Youngstown	171	$160,461	$151,059	+ 6
Alton & Southern	103	155,290	170,310	- 9
Ann Arbor	294	318,307	274,367	+16
Atchison, Topeka & Santa Fe	13,115	23,808,857	19,553,304	+22
Atlanta, Birmingham & Coast	637	354,660	322,410	+10
Atlantic Coast Line	4,935	8,835,682	6,731,026	+31
Baltimore & Ohio	6,136	17,229,124	19,516,698	-12
Bangor & Aroostook	596	550,357	458,821	+20
Boston & Maine	1,789	3,921,091	3,955,152	- 1
Cambria & Indiana	35	53,293	76,442	-30
Central of Georgia	1,816	2,008,000	1,845,574	+ 9
Central of New Jersey	654	2,617,826	2,715,717	- 4
Central Vermont	422	317,900	381,252	-17
Charleston & Western Carolina	343	350,275	231,005	+52
Chesapeake & Ohio	3,077	10,431,675	8,565,886	+22
Chicago & Eastern Illinois	912	1,894,108	1,756,092	+ 8
Chicago & Illinois Midland	131	339,639	312,575	+ 9
Chicago & North Western	8,065	8,349,196	9,284,136	-10
Chicago, Ind. & Louisville	541	505,436	464,450	+ 9
Chicago, Mil. St. P. & P.	10,410	12,390,735	11,033,271	+12
Chicago, Rock Island & Pac.	7,749	8,961,294	8,635,343	+ 4
Chicago, St. P., Minn. & O.	1,617	1,435,372	1,461,177	- 2
Colorado & Southern	748	1,256,014	1,284,557	- 2
Columbus & Greenville	168	74,513	83,663	-11
Delaware & Hudson	848	2,384,032	2,283,144	+ 4
Delaware, Lackawanna & West.	973	3,221,917	3,324,070	- 3
Detroit & Mackinac	228	41,429	36,067	+15
Detroit & Toledo Shore Line	59	96,631	73,128	+32
Duluth, Missabe & Iron Range	546	1,202,791	1,026,609	+17
Duluth, South Shore & Atlantic	535	163,017	144,274	+13
Elgin, Joliet & Eastern	392	1,041,535	1,203,544	-13
Erie	2,355	6,398,151	5,880,153	+ 9
Florida East Coast	682	1,422,263	1,371,437	+ 4
Fort Worth & Denver City	804	924,487	961,463	- 4
Great Northern	8,372	9,607,942	9,882,961	- 3
Gulf, Mobile & Ohio	1,963	1,159,965	1,297,625	-11
Illinois Central	6,604	14,649,687	14,214,925	+ 3
Kansas City Terminal	170	451,015	454,499	- 1
Lake Superior & Ishpeming	156	79,237	92,943	-15
Lehigh & Hudson River	96	112,312	154,797	-27
Lehigh & New England	190	220,729	180,805	+22
Lehigh Valley	1,260	4,384,555	4,338,195	+ 1
Louisiana & Arkansas	854	597,440	562,868	+ 6
Louisville & Nashville	4,755	7,426,526	7,307,786	+ 2
Maine Central	988	1,000,100	1,027,427	- 3
Minn. St. Paul & S. S. M.	4,277	2,251,767	2,336,751	- 4
Mississippi Central	158	70,733	75,239	- 6
Missouri & Arkansas	365	132,927	69,597	+91
Missouri-Kansas-Texas	1,798	3,446,453	3,587,765	- 4
Montour	51	119,488	113,089	+ 6
Nashville, Chat. & St. Louis	1,071	1,999,293	2,663,507	-25
New York Central	10,537	37,312,325	38,561,972	- 3
New York, Chicago & St. L.	1,687	3,712,842	3,461,156	+ 7
N. Y., N. H. & Hartford	1,838	7,740,395	7,928,894	- 2
New York, Ontario & Western	550	293,253	375,118	-22
Northern Pacific	6,577	7,669,030	7,571,934	+ 1
Northwestern Pacific	331	68,142	68,701	- 1
Pennsylvania & Long Island	9,750	42,089,362	45,579,223	- 8
Pennsylvania-Reading S. S. L.	393	194,878	199,425	- 2
Pere Marquette	1,949	2,366,797	2,354,964	+ 1
Pittsburg, Shawmut & Northern	190	25,051	41,908	-40
Pittsburgh & West Virginia	136	221,620	344,064	-36
Reading	1,330	7,118,056	7,582,869	- 6
Richmond, Fred. & Potomac	118	1,170,011	1,408,422	-17
Rutland	407	203,539	219,078	- 7
St. Louis-San Francisco	4,647	5,567,390	5,643,866	- 1
Southern	7,726	16,345,314	15,568,684	+ 5
Southern Pacific-Pac. Lines	8,247	20,748,252	24,270,154	-14
Spokane, Portland & Seattle	962	913,873	757,864	+21
Tennessee Central	286	229,714	298,290	-23
Terminal R. R. of St. Louis	367	871,413	828,310	+ 5
Texas & New Orleans	4,327	5,172,878	4,327,169	+19
Texas & Pacific	1,884	4,046,396	4,027,823	+ 1
Union Pacific	9,781	22,702,617	23,903,135	- 5
Virginian	657	1,591,321	2,552,378	-38
Wabash	2,394	4,363,134	4,540,201	- 4
Western Maryland	720	1,833,001	1,637,362	+12
Western Pacific	1,195	2,427,200	1,999,500	+21
Wheeling & Lake Erie	507	949,880	943,336	+ 1

Materials and Supplies in Stock—Class I Railroads

	Fuel	Rail New & S. H.	Gross Ties	Stores Stock	Scrap	Total
	(000)	(000)	(000)	(000)	(000)	(000)
		Year 1944				
January 1	$50,221	$22,342	$67,964	$382,566	$9,628	$532,721
February 1	49,056	24,331	72,039	387,899	9,937	543,262
March 1	49,749	25,199	76,254	393,892	9,925	555,019
April 1	49,938	26,923	81,525	400,722	10,334	569,442
May 1	51,320	23,081	80,463	410,114	10,319	575,297
June 1	56,885	22,637	79,004	413,410	10,346	582,282
July 1	62,558	22,729	75,244	418,408	9,683	588,622
August 1	64,515	23,190	75,004	422,002	9,682	594,393
September 1	67,538	22,324	71,306	427,277	10,292	598,737
October 1	67,357	22,253	70,322	430,811	11,488	602,231
November 1	66,997	24,392	70,052	435,141	9,216	605,798
December 1	64,723	23,577	69,875	440,470	9,592	608,237
		*Year 1945**				
January 1	59,182	24,292	72,434	437,575	10,155	603,638
February 1	56,398	25,149	75,259	440,353	10,021	607,180
March 1	52,237	26,760	78,090	439,922	14,093	611,102
April 1	52,313	27,142	78,236	441,106	15,345	614,142
May 1	51,236	26,057	74,792	448,326	10,414	610,825
June 1	51,402	24,238	70,302	450,437	10,110	606,489
July 1	53,708	25,213	67,450	450,773	9,494	606,638

* Subject to Revision.

first half of 1942 by 9 per cent and were 6 per cent greater than for the first six months of 1941.

Fuel purchases continued at a high rate and amounted to $285,859,000 during the first six months of this year despite the fact that this was 7 per cent less than during the same period of 1944. However, 1945 expenditures exceeded those of the first six months of 1943 by 9 per cent, they were 40 per cent greater than those for the corresponding period in 1942 and topped 1941 first-half expenditures by fully 81 per cent.

Although the inventory value of materials in stock reached a new high on April 1, 1945, when it totaled $614,142,000 or 8 per cent more than on the same date of the preceding year, many influencing factors during the months of May and June are manifest in a subsequent reduction of approximately 1 per cent by July 1, 1945. Inventory on May 1, 1945, amounted to $610,825,000; it was further reduced to $606,489,000 on June 1, and showed little fluctuation on July 1, when it was reported as $606,638,000, according to the Interstate Commerce Commission.

Although the total inventory value of materials and supplies in stock on July 1, 1945, was approximately 3 per cent greater than on the same day in 1944 this, according to *Railway Age* estimates, reflected an increase of approximately 8 per cent in stores stock which increased from $418,408,000 on July 1, 1944, to $450,773,000 on July 1, 1945. The value of rails on hand showed an increase of 11 per cent and amounted to $25,213,000 on July 1, 1945, compared with $22,729,000 on the same day in 1944. On the other hand, fuel showed a sharp decrease amounting to 14 per cent less than the value of fuel in stock on July 1, 1944. This year's total amounted to $53,708,000 compared with $62,558,000 on the same day in 1944. Crossties were another exception and the total value held in inventory on July 1, 1945, amounted to $67,450,000 or 11 per cent less than the $75,244,000 value on July 1, 1944.

Raymond J. Morfa Heads M-K-T

Election culminates a typical American rise from messenger boy to executive

R. J. MORFA who, as announced in the *Railway Age* of September 29, has been elected chairman of the board of the Missouri-Kansas-Texas, plans to give that railway resident executive management for the first time in many years as he is moving his headquarters to St. Louis as soon as possible. The late Matthew S. Sloan, who died on June 14, and who piloted the Katy through the depression as chairman of the board and president, maintained offices in New York as well as St. Louis, although he spent much of his time on the line, while Lewis E. Pierson, who was named interim chairman on June 26, also maintained offices in New York.

Raymond J. Morfa was born in Chicago in 1894, and in 1906 accepted employment as messenger boy and, until the first World War, was employed by various companies in that capacity, as stenographer and later as a private secretary. During World War I he enlisted in the air force, earned his commission as a flier, and went to France to remain until January, 1919. On his return to this country he became a salesman for Pathe Industries and still remains an important stockholder and director in this moving picture company.

In 1932 he was employed by the Van Sweringen brothers to call on holders of notes on their various railway interests, to obtain assents to the extension of such notes, and later was retained in various financial capacities, including the job of securing extensions of other notes in both 1935 and 1938. After the Van Sweringen railroad "empire" passed into the hands of Robert R. Young and associates in the latter year, Mr. Morfa was retained in various capacities until 1942, when he was elected assistant to the chairman of the board of the Chesapeake & Ohio at Cleveland, Ohio, and later became vice-president of the New York, Chicago & St. Louis in addition. Mr. Morfa is severing his connection with the Young interests, at his own request, to go with the Katy.



Raymond J. Morfa

The Katy Domain

The Katy system consists of 3,148 miles of line, serving the states of Missouri, Kansas, Oklahoma and Texas, the Katy proper having 1,798 miles of line and its Texas subsidsiary 1,350 miles of line. With main lines extending between St. Louis-Kansas City and San Antonio-Houston-Galveston the Katy was an important war transportation agency in view of the large number of military establishments situated along its lines, and was also an important factor in handling the war-time oil transportation between Texas and the eastern refining and consuming points. Fortunately, Mr. Sloan had sufficient foresight to inaugurate a program of system-wide improvements just prior to the war, so that the Katy was thoroughly rebuilt and thus had a far greater capacity than ever before at the time when such capacity was most needed.

Mr. Morfa inherits what is practically a new staff of department heads, in that they occupy new positions, although the men in question have served the Katy for many years. In the past few months the jurisdiction of J. F. Garvin, vice-president in charge of traffic, has been extended and many changes have been made in other traffic department offices. H. M. Warden, vice-president and general manager, was elected to that post early in 1945, following the death of F. W. Grace, who had held the position for many years. Donald V. Fraser, formerly executive assistant, has been elected vice-president under the new set-up.

In taking over the management, Mr. Morfa stated his belief that the Southwest is entering an unprecedented era of growth and development. "It is an honor to head a railroad that has such a long record for constructive service," he said, and added, "I am especially pleased that I am thus afforded an opportunity to have an active part in the Southwest's post-war progress. The war focused attention on the many industrial advantages of the Southwest, with the result that manufacturers the country over are familiar with its immense store of raw materials, the availability of ample labor, power and transportation facilities—and, it should not be overlooked that the Southwest will be called upon to produce more foodstuffs than ever before, and its agricultural development will keep pace with its industrial growth."

Mr. Morfa expressed assurance that there will be no change in the Katy's well-known and long established policies, adding that "its forward strides and progress of improvements in plant and service will be pursued with increased vigor."

A resume of the Katy's financial position was published in the *Railway Age* of June 23, 1945, page 1095, in the article reporting the death of Mr. Sloan.

Signal Section Presents Its Reports

Annual meeting cancelled but Committee of Direction meets to act on reports from standing committees

IN LIEU of an annual meeting, the Signal Section, A. A. R., held a meeting of the Committee of Direction in Chicago on October 4, at which the chairmen of the 11 standing committees presented their reports, and action was taken to accept them as information or for submission to letter ballot. S. E. Noble, chairman of the Section, and superintendent of telegraph and signals, Chicago & North Western, had charge of the meeting, and in his opening remarks said that we are all looking forward to 1946 when we hope that the Signal Section can hold its annual meeting as in the years prior to the war. Mr. Noble also explained that 1945 is the fiftieth anniversary of the founding of the Railway Signaling Club, the forerunner of the Railway Signal Association which is now the Signal Section, A. A. R.

Economics of Signaling

The reports of ten of the committees included requisites, specifications and standard drawings which are of interest primarily to signal engineers and are not discussed here.

The report of Committee I—Economics of Railway Signaling included extended discussions and diagrams on the following:

(1) Costs involved in stopping trains
(2) Economies of coded track circuit control in automatic block signal territory on the Pennsylvania
(3) Alternating current primary battery track circuits with non-automatic rectifiers on the Chicago, Rock Island & Pacific—economic results
(4) Economics of converting automatic block signal system to centralized traffic control on the New York, Chicago & St. Louis
(5) Economics of converting automatic block signal system to centralized traffic control on the Denver & Rio Grande Western
(6) Economics of centralized traffic control on single-track lines of less than 20 trains per day
(7) Method of forecasting and proving the economic value of signaling
(8) Economics of signaling turnouts
(9) Reduction in passing sidings on single-track lines with centralized traffic control operation
(10) Signaling a yard lead
(11) Saving in operating expenses by closing (a) A block of train order service, (b) One trick at block or train order office
(12) Use of capacitors in signal power lines

A few of these reports are given in part herewith.

The report of signaling turnouts included detailed explanations and charts of train speeds when making diverging moves into or out of sidings where No. 10, No. 12, No. 16, No. 18 and No. 20 turnouts are in service with signaling to direct enginemen to bring their trains up to and through the turnouts at the speeds for which they are designed.

N. Y. C. & St. L. Automatic Block

Between Madison, Ohio, and Euclid, the New York, Chicago & St. Louis has converted 28.2 miles of single-track automatic block signaling to centralized traffic control. This is a section of single track between two sections of double track with an average of 41 trains per day before and 37 trains per day after the C. T. C. The gross ton-miles on this operating division increased from 435,497,000 in March, 1944, to 450,663,000 in March, 1945.

Interlockings at each end of this section of single track had been in service prior to the C. T. C. and were retained with supervisory control of the signals under C. T. C. operation. There are six passing sidings on the single track, two of which were formerly equipped with spring switches at one end and which were replaced with power switches. The east end of two sidings were and will continue to be interlocked. Track circuits were provided on all controlled sidings. The C. T. C. machine was placed in the dispatcher's office, which is located 28 miles east of the east end of the controlled single track.

An analysis of typical 16-day periods before and after the installation shows the following savings:

Average time saved:	
Passenger trains	12 minutes per day
Manifest freight trains	374 minutes per day
Other freight trains	405 minutes per day
Total daily train and engine saving	791 minutes per day
Total annual trains and engine saving	4,807 hours
Total annual car days saved	15,022
Total annual train stops eliminated	13,414

This project completed the installation of C. T. C. on the single-track portion of the Cleveland division, 80.9 miles of which is double track. As a result of having all passing track switches in single track either included in interlocking or power operated from the control station, an average of 200 tons was added to eastward freight trains except local. Train-mile saving = $56,914.

Economic Statement

1. Cost of Installation:		
(a) Chargeable to capital investment:		
Signaling	$227,328	
Track changes	17,667	
Telephone work	130	
Total		$245,125
(b) Chargeable to operating expense:		
Signaling	$12,302	
Track changes	3,920	
Telephone work	4,286	
Total		20,508
(c) Total		$265,633
2. Gross Saving per Annum:		
(a) Payroll savings	$2,638	
(b) Train and engine hours	48,070	
(c) Train and engine stops	36,620	
(d) Car days savings	15,022	
(e) Train mile savings*	56,914	
(f) Total		$159,264
3. Increased Maintenance and Operation per Annum		7,050
4. Net saving Exclusive of Interest Charges		$152,214
5. Interest (5% of $245,125)		12,256
6. Net Savings		$139,958
7. Annual Return above Interest Charges:		
(a) On capital investment (6 ÷ 1-a)		57%
(b) On total cost (6 ÷ 1-c)		53%
8. Annual Return on Investment:		
(a) On capital investment (4 ÷ 1-a)		62%
(b) On total cost (4 ÷ 1-c)		58%

*1. Cost per train mile:

Crew wages	$0.6304
Engine operating expense, excluding maintenance of engine houses	1.0874
Total	$1.7178

2. Train miles = 251 (trains saved) × 132 (miles) = 33,132 train miles.

Less Than Twenty Trains a Day

In 1942 a centralized traffic control system was placed in service between Manilla, Iowa, and Council Bluffs, on the Chicago, Milwaukee, St. Paul & Pacific a distance of approximately 60 miles. Trains had previously been operated by train orders and the manual block system.

In order to determine the savings that were effected by the installation, comparable 15-day periods were chosen before and after installation, and the results are tabulated below:

Analysis of running time for freight train, 15-day period, September 1 to 15, inclusive, 1941 and 1944:

	1941	1944
Total number of freight trains	164	131
Total elapsed time (Manilla-Council Bluffs)	24,876 min.	15,446 min.
Average running time per freight train	151.7 min.	118.0 min.
Average running time per freight train	2.53 hrs.	1.97 hrs.
Average savings per freight train	33.7 min.	
Average savings per freight train	0.56 hr.	

Economic Statement

1. Cost of Installation:		
(a) Chargeable to capital investment	$156,656	
(b) Chargeable to operating expenses	2,470	
(c) Total		$159,126
2. Gross Savings per Annum:		
(a) Payroll savings (operators)	$3,907	
(b) Train hours	35,200	
(c) Train stops	1,227	
(d) Total		$40,334
3. Maintenance and Operation per Annum:		
(a) Maintenance of new facilities	$5,900	
(b) Additonal operator wages	1,287	
(c) Total		7,187
4. Net Saving Exclusive of Interest Charges		$33,147
5. Interest (5% of $156,656)		7,833
6. Net Saving		$25,314
7. Annual Return above Interest Charges:		
(a) On capital investment (6 ÷ 1-a)		16.2%
(b) On total cost (6 ÷ 1-c)		15.9%
8. Annual Return on Investment:		
(a) On capital investment (4 ÷ 1-a)		21.2%
(b) On total cost (4 ÷ 1-c)		20.9%

Automatic Block on D.&R.G.W.

Between Grand Junction, Colo., and Helper, Utah, the Denver & Rio Grande Western has in service one complete subdivision of single-track centralized traffic control, which is 176 miles in length, and which also includes facilities for the power operation of yard entrance switches at the east end of Helper Utah.

The installation includes power operation of 34 single siding and 4 double siding switches, 1 power spring derail, 2 power spring derailing switches, 6 spring switches and 7 electric locks on hand-operated switches. Thirty-nine miles of the east end of this installation is handled by dispatchers from a machine located at Grand Junction, Colo. One hundred thirty-four miles is handled by dispatchers from a machine located at Green River, Utah. The yard entrance switches at Helper are handled by operators at that point.

Train movements vary greatly, generally averaging 45 per day, but a maximum per 24-hour period has been 60. A comparison of a 7-day period (July 20 to 26, 1943) immediately prior to the installation of C. T. C. with a similar period (September 24 to 30, 1944) after C. T. C., from Grand Junction to Helper, indicates the following:

Economic Statement

1. Cost of Installation:		
(a) Chargeable to capital investment:		
Signaling	$751,637	
Track changes	471,593	
Telegraph work	4,810	
Total		$1,228,040
(b) Chargeable to operating expense:		
Signaling	$93,645	
Track changes	67,015	
Trucks	3,180	
Total		163,840
(c) Total		$1,391,880
2. Gross Saving per Annum		$387,005
3. Increased Maintenance and Operation per Annum		7,759
4. Net Saving Exclusive of Interest Charges		$379,246
5. Interest (5% of $1,228,040)		61,402
6. Net Saving		$317,844
7. Annual Return above Interest Charges:		
(a) On capital investment (4 ÷ 1-a)		26%
(b) On total cost (6 ÷ 1-c)		26%
8. Annual Return on Investment:		
(a) On capital investment (4 ÷ 1-a)		31%
(b) On total cost (4 ÷ 1-c)		27%

	Through freight		Passenger		Short and local turns	
	Before	After	Before	After	Before	After
WESTWARD						
Number of trains	74	81	30	40	34	41
Elapsed time	790h00m	651h21m	152h30m	200h55m	103h10m	100h36m
Mileage	13090.6	14328.9	5307.0	7076.0	1149.9	1392.9
Average speed	16.6	22.0	34.8	35.2	11.1	13.9
Average time per train	10h40m	8h02m	5h05m	5h01m	3h02m	2h27m
EASTWARD						
Number of trains	67	77	29	33	35	38
Elapsed time	623h33m	519h16m	144h30m	150h02m	77h07m	110h32m
Mileage	11862.3	13621.3	5130.1	5837.7	1168.2	1323.0
Average speed	19.0	26.2	35.5	38.9	15.1	12.0
Average time per train	9h18m	6h44m	4h59m	4h33m	2h12m	2h54m
TOTAL						
Number of trains	141	158	59	73	69	79
Elapsed time	1413h33m	1170h37m	297h00m	350h57m	180h17m	211h08m
Mileage	24952.9	27950.2	10437.1	12913.7	2318.1	2715.9
Average speed	17.7	23.9	35.1	36.8	12.9	12.9
Average time per train	10h02m	7h25m	5h02m	4h48m	2h37m	2h40m

Rail Output Hits 15-Year High

THE production of rails in the United States in 1944 totaled 2,490,656 net tons, a gain of 363,660 tons, or 17.1 per cent, compared with 1943, establishing a new high since 1929, according to figures published in the annual statistical report of the American Iron & Steel Institute. Since 1938, when the output was 697,642 tons, 1944 marks the sixth successive year in which rail production has gained as compared to the preceding year. Nevertheless, the total for 1944 was still substantially less than the amount rolled in several years during the Twenties, including 1926, when 3,603,767 net tons were rolled.

In an accompanying table, the output of rails rolled in 1944 and in previous years back to 1927 is tabulated by four weight groups. It will be seen from a study of this table that production in all weight groups, except the lightest, was larger in 1944 than in 1943, and, significantly, that the largest proportionate increases in production were in the two heaviest weight groups. Specifically, the weight group including rail sections of 120 lb. or over increased from 750,346 tons in 1943 to 894,245 tons in 1944, or 19.2 per cent; the rail tonnage produced in the group weighing 100 lb. and less than 120 lb. increased from 847,839 tons in 1943 to 1,032,256 tons in 1944, or 21.8 per cent; and production in the group weighing more than 60 lb. and less than 100 lb. increased 10.1 per cent in 1944, compared with 1943. In the group weighing 60 lb. and less, production decreased 0.7 per cent compared with 1943.

Of the total tonnage of rails produced in 1944, 2,419,969 tons, or 97.2 per cent, were rolled from open-hearth steel. Only 14,261 tons of rails were rolled from Bessemer and electric steels in that year, compared with 23,747 tons in 1943, marking a reversal in the trend for the tonnage in this category to increase that had been in evidence for several years prior to 1944. Also included in the total output for 1944 were 49,399 tons rolled from old rails and 22,411 tons of girder and high tee rails.

As with the production of rails, the output of fastenings in 1944 showed a substantial increase, rising from 665,956 tons in 1943 to 807,066 tons in 1944, an increase of 21.2 per cent. The total output of fastenings in 1944 included 179,315 tons of joint or splice bars, 65,590 tons of other rail joints, and 562,161 tons of tie plates.

Production of Rails by Weight Per Yard—Net Tons

Year	60 lb. or less	Over 60 and less than 100 lb.	100 and less than 120 lb.	120 lb. and over	Total
1927	*181,256	†798,226	1,472,155	691,627	3,143,264
1928	*150,301	†662,053	1,348,199	804,639	2,965,192
1929	*158,326	†574,080	1,381,631	934,758	3,048,795
1930	*107,101	†391,079	935,756	664,085	2,098,021
1931	*56,100	†166,793	555,242	518,546	1,296,681
1932	*18,654	†47,374	240,902	143,944	450,874
1933	55,010	63,153	172,488	175,601	466,252
1934	78,495	101,640	550,639	400,677	1,131,451
1935	63,982	112,431	381,696	238,812	796,921
1936	107,644	135,585	684,910	438,089	1,366,228
1937	113,889	218,374	815,280	471,685	1,619,228
1938	50,375	85,177	371,534	190,556	697,642
1939	92,994	83,611	620,992	515,050	1,312,647
1940	140,443	339,672	688,109	510,762	1,678,986
1941	172,264	323,968	820,695	610,924	1,927,851
1942	124,938	438,562	924,851	607,808	2,096,159
1943	164,096	364,715	847,839	750,346	2,126,996
1944	162,942	401,213	1,032,256	894,245	2,490,656

* Under 50 lb. per yd.
† 50 and less than 100 lb. per yd.

Steam Locomotive Ratings

A discussion of the principles involved in the establishment of normal steam locomotive output and its effect on train operation over varied profiles

By A. I. TOTTEN

THE steam locomotive has a definite tractive force rating, as fixed by the steam pressure, the number and diameter of the cylinders and the diameter of the driving wheels. It is conservatively calculated upon the basis of 85 per cent of the specified steam pressure and with new driving wheel tires. If the gauge pressure remains constant, and if the losses between the throttle and the cylinders are less than assumed, then the obtainable tractive force will be somewhat more than the rated figures. A further slight augmentation will occur with worn driving wheel tires. The tractive force, as expressed in pounds, is generally of the order of 22 per cent to 26 per cent of the weight on drivers, thus representing factors of adhesion of 4.53 to 3.84, respectively. The tractive force, in combination with the compensated grade conditions, on a given railroad, determines the weight of train that can be handled.

Having determined the tonnage rating of the locomotive over the ruling grade, without stalling or abnormal driving-wheel slippage, the operating speeds, upon which the schedules are based, becomes the next consideration. This is a matter of horsepower, with the tractive force forming one of the elements.

Unlike the electric and Diesel-electric locomotives, the horsepower of a given type of steam locomotive is not a definite, determinable factor. It depends upon many things, among which may be listed:

1—The speed of operation, expressed in m.p.h., which affects the piston speed, cut-off and steam consumption.

2—The condition of the boiler, whether clean or scaled.

3—The condition of the flues, whether clean or dirty.

4—The condition of the fire, when the maximum output is desired.

5—The B.t.u. content of the fuel and whether it is dry or wet.

6—The firing rate, that can be economically maintained over long periods of operation.

7—The valve setting, which varies with the wear of the moving parts.

8—The details of the engine design, with especial reference to the steam passages, valve ports and drafting arrangements.

9—The personal equation, as represented by the engineman and fireman.

Apparently, for these reasons, railroad mechanical men are reluctant to discuss the subject. The steam locomotive builders, however, are willing to present speed-tractive force curves as representing the maximum cylinder output, with the locomotive in perfect condition and at the maximum firing rate. From these curves, it is possible to ascertain the maximum horsepower output and the speed at which it occurs.

After acquiring new types of steam locomotives, it is customary for some of the larger railroads to make either dynamometer or stand tests to determine the maximum output at the different speeds and cut-offs, and with a firing rate far in excess of that for economical use. This maximum output is obtained with a fuel consumption up to 250 lb. of coal per square foot of grate per hour, under which condition the boiler efficiency is normally less than 40 per cent.

Undoubtedly, reference can be made to published data that show consecutively the maximum locomotive output, generally expresseed as drawbar horsepower, the pounds of coal per 1,000 gross ton-miles or per passenger car mile and the cost of locomotive maintenance. It seems safe to say, however, that the unit coal consumption and maintenance cost are based upon an average firing rate of 80 to 90 lb. and a maximum firing rate of 150 lb. per square foot of grate per hour.

The maximum output of a steam locomotive, as limited by either the boiler or the cylinders, can be readily obtained, over the entire speed range, by recognized testing methods. The figures so derived, can form the basis for the determination of what might be termed a normal rating. It will then be possible to utilize such rating in the preparation of speed-tractive force curves, from which can be calculated, within a reasonable degree of accuracy, the performance of any locomotive in handling trains over a given profile.

Locomotive Ratings

In view of all of the foregoing, it seems safe to assume that the actual operating rating of a steam locomotive in reasonably good order will approximate 80 per cent of the dynamometer or test stand maximum rating.

The conditions, herein discussed, were apparently appreciated by the American Railway Engineering Association, which established a normal rating basis, applicable, in general, to modern steam locomotives, but susceptible of use for all types. The ratings, as shown on Page 448 of the A.R.E.A. Bulletin of February, 1938, are based upon the weight on drivers and the relation between such weight and the total engine weight for the different types of locomotives.

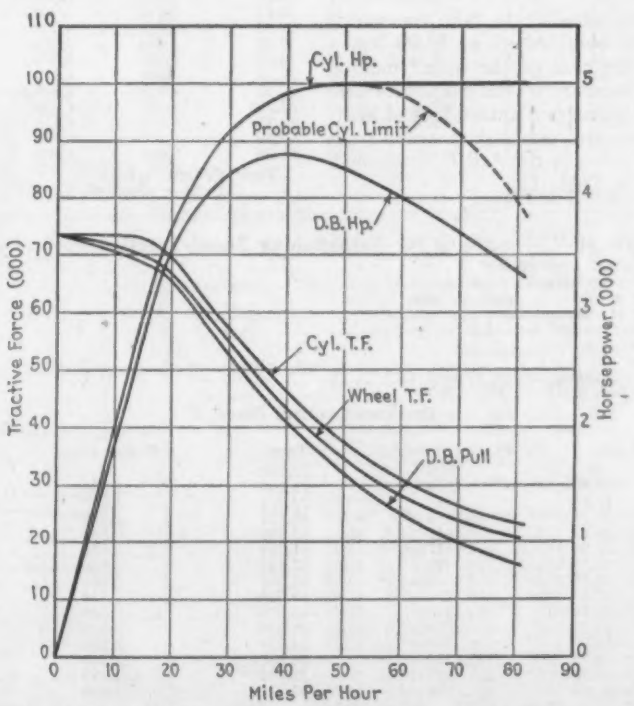


Fig. 1—Speed-Tractive Force Curves for Modern 4-8-4 Passenger Locomotive Having 27-In. x 32-In. Cylinders; 275-Lb. Steam Pressure; 107.7 Sq. Ft. of Grate Area and Having 5,271 Sq. Ft. of Evaporative Heating Surface —The Weight on Drivers Is 144 Tons and Total Engine Weight is 247 Tons

Table I—Normal Ratings for Curves

A. R. E. A. Method

Weight on drivers, lb.	288,000
Weight of engine, lb.	494,000
Per cent weight on drivers	58.2
Hp. rating per ton on drivers	33.6
Total hp. rating	4,838

Boiler Method

Evaporative heating surfaces, sq. ft.:	
Tubes	4,693
Firebox total	578
Steam pressure, lb. per sq. in.	275
Superheat, deg. F.	250
Steam per ihp., inc. aux., lb.	17.8
Evaporation:	
4,693 × 10 =	46,930 (Cole)
578 × 55 =	31,790 (Cole)
	78,720
Feedwater heater (10 per cent)	7,872
Total evap., lb.	86,592
Evap., lb. per sq. ft. of heating surface	16.4

$$\text{Cylinder hp.} = \frac{86{,}592}{17.8} = 4{,}850 \text{ hp.}$$

Grate Method

Grate area, sq. ft.	107.7
Firing rate, lb. per sq. ft.	150.0
Coal as fired, B.t.u.	14,000
Steam, B.t.u.	1,344
Steam, lb. per cyl. hp.	17.8
Boiler eff. per cent estimated	53.0

$$\text{Cyl. hp.} = \frac{107.7 \times 150 \times 14{,}000 \times .53}{1344 \times 17.8} = 5{,}000$$

Evaporation factor = 5.5 (lb. steam per lb. coal fired)

Note: Under average conditions, the firing rate may be 80 lb. of coal per square foot of grate per hour and the boiler efficiency 76 per cent. This will result in an evaporation factor of approximately 7.9.

The figures can be closely checked with those obtained by the so-called boiler and grate calculations, hereinafter shown.

For the purpose of emphasizing the principle of normal rating for steam locomotives, an illustration is given of its application to a typical modern Class 4-8-4 passenger locomotive. Table I shows the application of three methods for determining the normal or effective rating.

It is now possible to take the maximum figure obtained—i. e., 5,000 h.p.—which in the case of the boiler method means an increase in the evaporation to 16.8 lb. of steam per square foot of heating surface, and establish a speed-tractive force curve by the A.R.E.A. method, as shown in Table II.

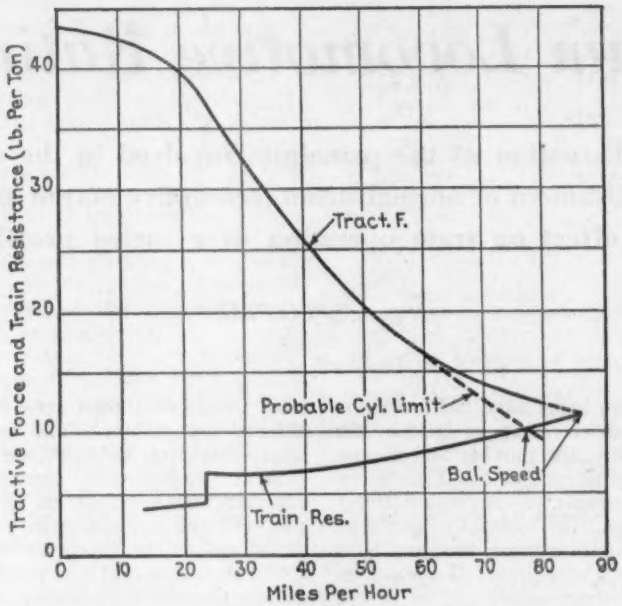


Fig. 2—Steam Locomotive Curves for Calculating Purposes

The resultant normal cylinder, or boiler and driving-wheel horsepowers and the corresponding piston speeds are shown in Table III.

The details of the locomotive design, the type of valve used, the resistance to the flow of steam, etc., will determine the maximum piston speed at which the full boiler output can be utilized.

Table III—Locomotive Horsepower and Piston Speed

Speed m.p.h.	Cylinder hp.	Driving wheel hp.	Piston speed ft. per min.
13.50	2,640	2,530	346
16.88	3,260	3,120	432
20.25	3,750	3,590	518
23.63	4,140	3,960	605
27.00	4,410	4,200	691
30.38	4,640	4,390	778
33.75	4,790	4,520	864
37.13	4,850	4,590	951
40.50	4,920	4,600	1,037
47.25	5,000	4,630	1,210
60.75	5,000	4,525	1,555
67.50	5,000	4,490	1,728
81.00	5,000	4,400	2,073

Note: Cylinder stroke, in. 32
Driving wheel diam., in. 79

Table II—Calculations for Establishing Speed-Tractive Force Curve

1 —Type, wheel arrangement	4-8-4
2 —Weight on drivers, actual tons	144
2A—Weight on drivers, adjusted tons	147
3 —Weight of engine, tons	247
4 —Weight of tender, tons	189
5 —Total weight, tons	436
6 —Cylinder hp.	5,000
7 —Hp. per adjusted ton on drivers (K)	34
8 —Basic speed, m.p.h = .396 × K =	13.5 = V1

Cylinder Tractive Force, lb.

Speed, m.p.h.		Per ton on drivers	Total	Engine losses	Driving-wheel tractive force
0	0	500	73,300	0	73,300
1.00 × V1	13.50	500	73,300	2,880	70,420
1.25 × V1	16.88	493	72,471	2,880	69,591
1.50 × V1	20.25	473	69,531	2,880	66,651
1.75 × V1	23.63	447	65,709	2,880	62,829
2.00 × V1	27.00	417	61,299	2,880	58,419
2.25 × V1	30.38	389	57,183	2,880	54,303
2.50 × V1	33.75	361	53,067	2,880	50,187
2.75 × V1	37.13	334	49,098	2,880	46,218
3.00 × V1	40.50	310	45,570	2,880	42,690
3.50 × V1	47.25	270	39,690	2,880	36,810
4.00 × V1	54.00	237	34,839	2,880	31,959
4.50 × V1	60.75	210	30,870)	2,880	27,990)
5.00 × V1	67.50	189	27,783)*	2,880	24,903)*
6.00 × V1	81.00	158	23,226)	2,880	20,346)

* Based on boiler rating only.

Note: The constant .396 used in the calculation in Item 8 for determining the basic speed is taken from a report on locomotive capacity which appeared in Vol. 39 of the Proceedings of the A. R. E. A. page 441. The derivation of the constant appears in the section "Performance Capacity" on page 454 of the report.—Editor.

It will be noted in Table II that a deduction of 2,880 lb., or 20 lb. per ton on drivers, has been made throughout the speed range, for the purpose of reducing the so-called cylinder tractive force values to terms of output at the rims of the driving wheels.

About 30 or more years ago, it was the established practice to take 25 lb. per ton on drivers to overcome the internal machine friction of such parts as driving wheels, pistons, valves, crossheads, etc. This presumably included the driving-wheel journal friction, but not that for the engine or tender trucks.

With the advent of the Davis train resistance formulas, in 1926, it became the practice to use a figure of 20 lb. per ton, instead of 25 lb. per ton on drivers. This was deemed to exclude the journal friction element, which became one of the factors in the application of the abovementioned formulas.

It seems preferable to utilize the locomotive driving-wheel output figures for all calculations pertaining to train operation, nevertheless most railroads work along the lines of drawbar output, which will vary with every difference of grade, speed and track curvature, due to the effect of these factors on the locomotive itself, which in turn affects the power available at the drawbar for hauling the train.

The drawbar pull on level tangent track, and consequently the horsepower, will vary at the different speeds, both on account of the locomotive characteristics (See Table II) and the resistance values. At the speeds shown in Table II, the application of the Davis formulas results in resistance values, applicable to the engine and tender, shown in Table IV. In the utilization of this table, the drawbar pull and horsepower are obtained by deducting the engine and tender resistances from the tractive force at the driving wheels, shown in Table II. The results are shown in Table V.

Attention is called to the fact that,

due to the engine mechanical losses and running resistance elements, the maximum effective output is obtained at different speeds. The following represents approximate figures:—

	M.P.H.
Cylinder output	47—81*
Driving wheel output	47
Drawbar output	38

* Limited by steam passages, ports, etc. At 81 m.p.h. the piston speed is 2073 f.p.m. (See Table III). The probable range of normal maximum cylinder output is 45 to 55 m.p.h.

In making speed-distance calculations, it is desirable to eliminate the drawbar pull factors, for reasons hereinbefore given. The wheel tractive force values, in combination with the total resistance elements, are used for this purpose. Before proceeding with the derivation of curves for actual use, the train weights and compositions must be known.

For the locomotive under discussion, the schedules will probably be based upon handling a passenger train of the following general characteristics:

No. of cars	16
Weight of cars, av. tons	80
No. of axles per car	6
Weight of train excl. loco., tons	1,280
Weight of train incl. loco., tons	1,680
No. of cars air-conditioned	10
Av. Hp. for air conditioning	250
Speed for a.c. cut-in (Approx. m.p.h.)	24
Maximum speed (m.p.h.)	70

By the further utilization of the Davis formulas, the car resistance is obtained on level tangent track and incorporated with the engine and tender resistance shown in Table IV. The total values are then reduced to a unit basis. Table VI gives the complete figures applicable to this particular train.

For further calculations, it is preferable to use the unit tractive force at the drivers and the unit train resistance, as shown by Table VI, in the preparation of the working curves for speed-distance calculations.

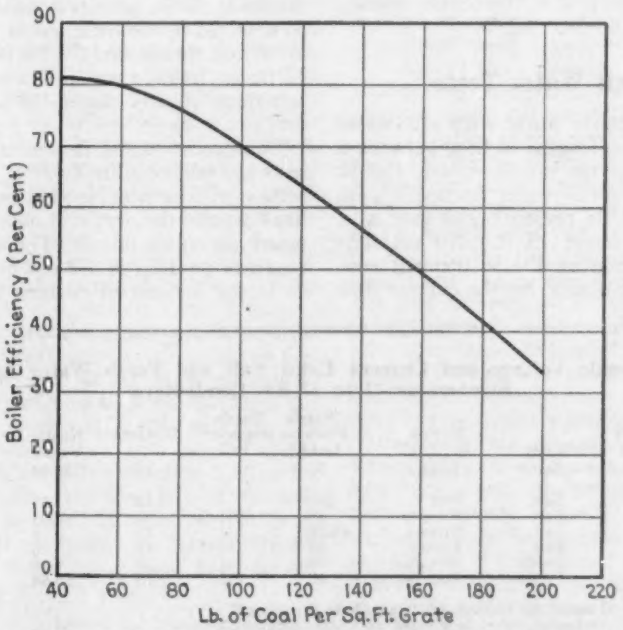


Fig. 3—Boiler Performance of 4-6-4 Type Locomotive as Calculated by A. I. Lipetz in a Paper Before the A.S.M.E.

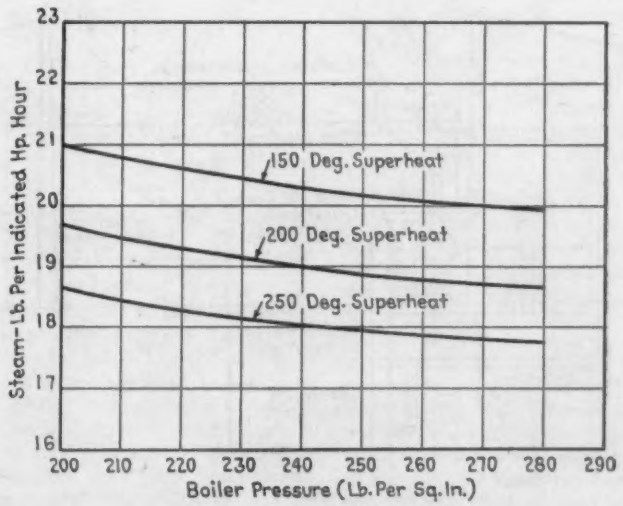


Fig. 4— Steam Per Indicated Horsepower for Varying Boiler Pressures and Superheat

Reference is made to Fig. 1 for the locomotive characteristics and to Fig. 2 for the corresponding working curve, which is applicable to the particular train, herein discussed.

This article is written for the purpose of emphasizing the principles involved in determining the normal output of any steam locomotive and the effect of such output on the operation of trains over the railroad profile. In the determination of such output any factors applying to the particular locomotive may be employed, provided they are applicable to the average, rather than the maximum operating conditions.

Table IV—Locomotive and Tender Resistance

DAVIS FORMULAS

Engine: $R = 1.3 + \frac{29}{w^{2/3}} + .03V + \frac{.0024\,AV^2}{n^{2/3}}$

Tender: $R = 1.3 + \frac{29}{w} + .045V + \frac{.044\,V^2}{n^{2/3}}$

R = Resistance in lb. per ton
n = Number of axles (driving and truck)
w = Weight per axle in tons
V = Speed in miles per hour

Speed m.p.h.	Engine	Tender	Total
13.50	734	539	1273
16.88	795	573	1368
20.25	867	607	1474
23.63	946	641	1587
27.00	1,030	679	1709
30.38	1,126	716	1842
33.75	1,230	754	1984
37.13	1,341	792	2133
40.50	1,462	832	2294
47.25	1,724	903	2627
54.00	2,020	987	3007
60.75	2,354	1,074	3428
67.50	2,715	1,172	3887
81.00	3,532	1,395	4927

Table V—Drawbar Pull and Horsepower

Speed m.p.h.	Driving wheel tract. force	Engine and tender resistance	Drawbar pull	Drawbar Hp.
13.50	70,420	1.273	69,147	2,490
16.88	69,591	1,368	68,223	3,080
20.25	66,651	1,474	65,177	3,510
23.63	62,829	1,587	61,242	3,870
27.00	58,419	1,709	56,710	4,090
30.38	54,303	1,842	52,46L	4,240
33.75	50,187	1,984	48,203	4,330
37.13	46,218	2,133	44,085	4,375
40.50	42,690	2,294	40,396	4,360
47.25	36,810	2,627	34,183	4,310
54.00	31,959	3,007	28,952	4,175
60.75	27,990	3,428	24,562	3,980
67.50	24,903	3,887	21,016	3,785
81.00	20,346	4,927	15,419	3,335

Table VI—Train Resistance

DAVIS FORMULAS

Passenger Cars: $R = 1.3 + \frac{29}{w} + .032 + \frac{.00034\,AV^2}{n^{2/3}}$

R = Resistance in pounds per ton
n = Number of Axles
w = Weight per Axle in tons
V = Speed in Miles per Hour

AIR CONDITIONING FORMULA

Tractive force in pounds per ton = $\frac{H \times C}{S \times W}$

H = Horsepower per car
S = Speed in miles per hour
W = Av. wt. of car (I)
C = Constant = 375

RESISTANCE IN POUNDS

Speed m.p.h.	Cars	Engines	Tender	Total	Unit res. lb. per ton
13.50	5,107	734	539	6,380	3.80
16.88	5,325	795	573	6,693	3.98
20.25	5,530	867	607	7,004	4.17
23.63	5,760	946	641	7,347	4.37
23.63	9,728	946	641	11,315	6.73*
27.00	9,472	1,030	679	11,181	6.65
30.38	9,372	1,126	716	11,214	6.67
33.75	9,306	1,230	754	11,290	6.72
37.13	9,344	1,341	792	11,477	6.83
40.50	9,434	1,462	832	11,728	6.98
47.25	9,882	1,724	903	12,509	7.44
54.00	10,202	2,020	987	13,209	7.86
60.75	10,765	2,354	1,074	14,193	8.44
67.50	11,443	2,715	1,172	15,330	9.12
81.00	13,043	3,532	1,395	17,970	10.69

* Air conditioning cuts in.

Conductivity of Fire Streams

New Haven conducts tests which show quantitatively what hazards are involved

TO DETERMINE the conductivity of water streams used in fire fighting when in the vicinity of high voltage wires, such as are used in the electrified territory of the New York, New Haven & Hartford, tests were conducted at the New Haven Fire Department Proving Grounds on Water street, New Haven, with the cooperation of Chief P. P. Heinz of the New Haven Fire Dept., and his staff. Some of these tests were demonstrated before several hundred fire chiefs, engineers and other interested parties.

The set-up used in making these tests is illustrated in the diagram. A wire mesh, approximately 6 ft. x 4 ft., was supported at a height of 18 ft. above the ground, by insulated span wires between two wood poles. These wires and the screen were connected to one terminal of a 5 kw., 25-cycle (2 kw., at 60 cycles) step-up transformer which stepped up the local 110-volt service to approximately 12,000 volts above the ground, the other terminal of the transformer being grounded. When the 110-volt service to the transformer was closed, a green indicating lamp was lighted. A 100 to 1 potential transformer was connected to the high tension cross-span wires, which operated a voltmeter, indicating the potential on the screen. Fresh water and salt water streams at various pressures, nozzle diameters, and nozzle types, were directed upon the energized screen from a carriage which allowed of varying the distance between the nozzle and the screen. A very sensitive combination voltmeter-milliammeter (Westinghouse PM-32) was connected to the nozzle by a heavily insulated flexible wire, and the other terminal of this instrument was grounded.

A sensitive relay which would operate on approximately 6 milliamperes was also connected to this wire running to the hose nozzle and to the ground, and through an auxiliary relay which caused a bell to ring and a red light to light whenever enough current flowed down the stream to the nozzle to cause it to operate.

Fresh Water Tests

With fresh water streams, a 1¼ in. nozzle and 60 lb. pressure at the nozzle, no voltage or current whatever could be detected when the nozzle was 30 ft. from the screen energized at 12,500 volts.

At 27 ft. slight intermittent kicks could be detected on the meter, which could not be evaluated in volts or milliamperes, but could be felt as a slight tingle.

At 25 ft. an average of 10 volts and 150 milliamperes could be detected. This also could be felt as a shock which was unpleasant, but not considered hazardous.

At 8 ft. an average of 300 volts was registered. The milliampere current reading was off scale. This was considered hazardous.

When a fog nozzle was substituted for the stream at 8 ft. distance, no reading at all could be detected.

Salt Water Tests

The first tests made with salt water employed two lengths of hose between a fire boat and the nozzle—about 100 ft. A solid stream of water from a 1¼ in. nozzle at 45 lb. pressure was used at a distance of about 15 ft. No readings could be made on the instrument connected to the nozzle, but the current flow down the stream was sufficient to blow a 20-amp. fuse in the 110-volt input side, and also pulled the voltage on the screen down to around 5,000 or 6,000 volts. This was due to the fact that the solid stream of salt water in the 100 ft. of hose between the nozzle and the harbor water effectively grounded the nozzle, and though the open stream was highly conductive, no readings could be made of voltage on the nozzle with such a short length of hose supply line.

The 20-amp. fuse was replaced by a 30-amp. fuse which was about the maximum current which would flow in the low-tension winding with the high-tension winding practically short-circuited by the salt water stream. This amount of current (30 amp.) in the supply circuit caused a decided drop in the supply voltage, so that the high voltage was not more than 6,000 to 8,000 volts.

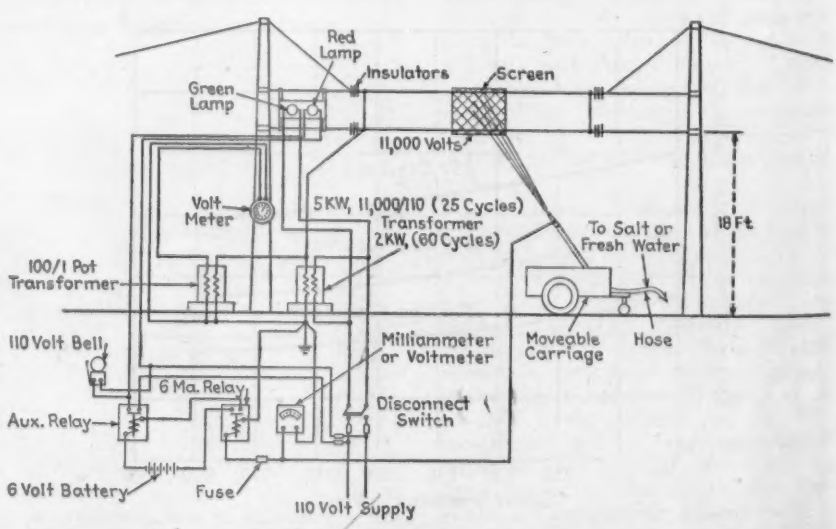
At a distance of 40 ft., with 1¼-in. nozzle at 50 lb. pressure, no dips could be detected in the high tesion voltmeter. With fog nozzle and 70 lb. pressure at 12 ft., no leakage was indicated, but the salt spray quickly caused the line insulators to arc over.

Data accumulated in a second set of tests are tabulated in Table I. A 500-ft. section of hose was inserted between the fire boat and the nozzle to obtain definite potentials on the nozzle. The instrument readings on Test A are not quantitative as to the amount of current flowing in

Table I—Nozzle Voltage and Current Using Salt and Fresh Water Sprays and Streams on 11 to 12 Kv. Conductors

Test	Volts (kv.) on Screen	Water	Stream or "Fog"	Nozzle Pressure (p.s.i.)	Nozzle Diameter In.	Distance (Ft.)	Nozzle Voltage	Stream Current (m.a.)
A	11.8	Salt	Stream	55	1	15	30-50	Undetermined
B	12.	Salt	Fog	100	1	15	(1.5)	0
C	12.	Salt	Stream	40	1¼	40	(1.5)	0
D	12.	Salt	Stream	60-70	1¼	40	0	0
E*	12.	Salt	Stream	45	1¼	45	0	0
F	11.8	Fresh	Stream	60	1¼	30	0	0
G	11.5	Fresh	Stream	60	1¼	10	50-60	5

Tests A and G could be classed as "Hazardous distances."
Tests B to F, inclusive, could be classed as "Safe distances."
* Test E gave a slight intermittent reading of less than 1.5 volts at 40 ft. distance, possibly indicating that the stream break-up was less than 45 p.s.i. than at 60-70.
The voltage at nozzle, in Tests B and C, was less than 1.5 volts in each case.



Arrangement of Apparatus and Wiring Diagram for Electrical Conductivity Tests

the stream because of leakage through the 500-ft. hose to ground.

In general these tests agree with the data published by the National Board of Fire Underwriters to establish minimum safe distances, i. e., where the feed back would not be hazardous for a number of voltages.

The object of the New Haven tests was to find the minimum distances from overhead 11,000-volt traction wires at which no perceptible current or voltage could be detected.

It would seem from these tests that with fresh water streams this distance is 30 ft. and with salt water streams the distance is 40 ft., with pressures normally used. With fog nozzles a distance of 10 ft. should be perfectly safe with fresh water, and 15 ft. with salt water.

Plans have been made to continue these studies in the near future with smaller nozzles, and also with salt water with a larger transformer capacity.

COMMUNICATIONS AND BOOKS . . .

Panama Canal Should Pay Its Way

CHICAGO

TO THE EDITOR:

Several years ago a British agent told the late President Franklin D. Roosevelt that the Panama Canal was a competitor of the Suez Canal and ought to reduce its tolls to divert ships from Suez to Panama. Accordingly, Mr. Roosevelt persuaded Congress to give him permission to raise or lower the tolls as he saw fit, subsequently lowering the tolls from $1.20 per ton to $0.90 (I don't exactly remember). The idea of Panama competing with Suez is nonsense, but that was a British device to get cheaper tolls.

I have today written to President Truman calling his attention to the necessity of requiring the Panama Canal to pay its own expenses and 3 per cent interest on the $550,000,000 construction cost, and asking him to use his authority to issue an executive order raising the tolls 33⅓ per cent on January 1, 1946, and 33⅓ per cent additional every six months thereafter until the tolls amount to 3 times the existing tolls. My idea is that the tolls ought to be about 15 cents per 100 lb. of general freight to give the transcontinental railroads more leeway, and to make the Canal pay its own way.

LEROY L. HUNTER, C. E.

NEW BOOKS . . .

International Transport and Communications Series: International Air Transport; International Telecommunications; International River and Canal Transport. Edited by Brig. Gen. Sir Osborne Mance; assisted by J. E. Wheeler. 117, 90, and 115 pages, respectively. 8½ in. by 5½ in. Bound in paper. Published by Oxford University Press, New York. Price, each volume, $1.

These three books and at least two others to come—one on International Rail Transport, the other on International Sea Transport—form a series designed to set forth fairly briefly the facts about each type of transportation, and of communication, which will have to receive some consideration in the shaping for plans for international political and economic relations in the future, together with the author's conclusions as to the directions which such plans may take, so far as international transportation and communications facilities and their relationships are concerned. The series is sponsored by the (British) Royal Institute of International Affairs. In general, it deals with the particular phases of international relations in its selected field that appear to concern the future world order rather than with the immediate problems of reconstruction or conversion to peace-time conditions.

The study of air transport deals not only with political and commercial questions, but suggests needs and possibilities for international action in the development of attitudes and regulatory procedures as to such matters as safety requirements, skill of crews, use of radio and other equipment, ground facilities, restricted areas, provision of fuel, traffic rules, customs regulations, and "tramp" or private flying. With the idea that international air transport ought to be developed as a beneficial public service, under adequate control, rather than a menace to the preservation of peaceful relationships, the authors outline what had been done in this direction before the outbreak of the recent war, then examine the possibilities for progress as programs for the future are shaped. Fundamental to this consideration, they point out, is the choice by the principal nations between three alternative theories of international administration of aviation, that is, (1) absolute sovereignty of each state over the air above it, and general monopoly of its use, (2) freedom of transit, but not of picking up or setting down passengers or freight, for planes of all nations, and (3) complete freedom of the air, analogous to freedom of the seas. With some qualifications, the authors appear to have a preference for the second of these options, dismissing the first as a "counsel or despair" and putting the burden of advocating the third on the economists.

The study of telecommunications deals with general telegraphy and telephony both by line systems and by radio, and also with related special services for propaganda purposes, the press, aviation, police, and the maritime field. In general, the authors outline what has been done to settle international problems of this character and what remains undone. Discussion of the unsolved questions incorporates suggestions for improving the existing international machinery for the disposition of technical, financial, commercial, legal, administrative, and strategic problems while making suitable provisions for the maintenance and improvement of the most effective service for all users.

River and canal transport—inland waterways, in other words—are subjected, in the volume devoted to that field, to a fairly detailed examination in the light of controversial political considerations and recent technical developments that have been reflected in a greatly extended network of artificial waterways, particularly in Europe. Both the general situation and the peculiarities of specific arteries are reviewed, with the rivers of western Europe receiving more detailed attention than other facilities.

The broad topics dealt with in the inland waterways study fall under such headings as competition between ports and between fleets, effects of nationalistic policies and insistence on unrestrained national sovereignty in waterway administration, and matters about which international action has been or can be undertaken. With the European situation particularly in mind, the authors have discussed some aspects of possible future developments in the way of international machinery for the administration of certain inland waterways.

A. S. T. M. Standards on Concrete and Concrete Aggregates. Published by the American Society for Testing Materials, 260 South Broad Street, Philadelphia 2, Pa. 141 pages. 6 in. by 9 in. Bound in Paper. Price $1.50.

This compilation, issued for the first time in July, 1945, gives all the approved specifications and test methods for concrete and concrete aggregates and, in addition, gives numerous other pertinent standards for cement, concrete reinforcement, preformed expansion-joint fillers and sieves for testing purposes. Included in the section on concrete are a specification for ready-mixed concrete and 16 test methods for concrete properties. The section on aggregates contains two specifications for lightweight aggregates and 15 test methods of various properties. Also included are four standards for concrete curing materials.

755TH JOINS IN BELGIAN CELEBRATION.—The Norfolk & Western-sponsored 755th Railway Shop Battalion, which maintains a rest center at Waulsort, a small resort town in Belgium, recently participated in welcoming ceremonies for 15 Belgian prisoners-of-war who had spent some years in Germany. Lt. Col. Miles G. Stevens, of Somerset, Ky., former employee of the Southern, and commanding officer of the 755th, headed the group of army railroaders who joined the townspeople in presenting a new flag to the Belgian war veterans.

GENERAL NEWS

Johnson to Address Shippers Meeting

Advisory boards to hold joint session and election in Chicago, October 19

An address by Col. J. Monroe Johnson, director of the Office of Defense Transportation, will be a feature of the ninth annual meeting of the National Association of Shippers' Advisory Boards at the Hotel Sherman in Chicago on October 18. Col. Johnson will speak at a joint luncheon of the shipper organization and the Traffic Club of Chicago.

At the business session of the National Association Charles H. Buford, vice-president of the Association of American Railroads, will talk on the national transportation situation, and Carl Giessow, vice-president of the shipper association and director of the transportation bureau of the St. Louis Chamber of Commerce, will report on car efficiency. Thomas L. Preston, assistant general counsel of the A. A. R., will discuss the legislative situation as it affects transportation.

The report of the National Planning Committee will be presented by Charles H. Vayo, of Rochester, N. Y., general traffic manager of the Eastman Kodak Company, and the 1945 perfect shipping campaign will be reviewed by J. E. Bryan, of Chicago, general traffic manager of the Wisconsin Pulp & Paper Manufacturers Traffic Association. John J. Kornfeld, traffic manager of the New Orleans Public Service, Inc., will report for the resolutions committee, and Warner B. Shepherd, of Pittsburgh, secretary of the shipper organization and assistant general traffic manager of the Aluminum Company of America, will tell of the activities of the 13 regional boards and the national association.

Officers will be elected. Clare J. Goodyear, of Philadelphia, president of the shipper group and traffic manager of the Philadelphia & Reading Coal & Iron Company, will preside. The general meeting will be preceded by a meeting October 17 of the board of directors of the National Association of Shippers Advisory Boards at the same hotel.

On October 17, two radio programs related to the occasion will be presented by Chicago stations—one by WLS as a part of its "Dinner Bell" program from 1:00 to 1:30 p. m., Chicago Daylight Saving Time (12:00 to 12:30 p. m., Central Standard Time), and the other by Station WAAF from 5:15 to 5:30 p. m., Chicago Daylight Saving Time.

Participating in the broadcast over WLS will be Col. I. Sewell Morris, of Chicago, sixth zone transportation officer of the Army Transportation Corps; Warren C. Kendall, chairman of the Car Service Division of the A. A. R., and Mr. Goodyear. Those who will be heard over WAAF are Robert S. Henry, assistant to the president of the A. A. R.; George H. Shafer, of St. Paul, Minn., former president of the S. A. B. national association, and Mr. Giessow. Albert R. Beatty, manager of the Publicity Section of the A. A. R., will conduct both programs.

Gray Bestows Legion of Merit on Former Santa Fe Men

In a ceremony at Louvain, Belgium, Col. Otto D. Crill, former superintendent of the Missouri division of the Santa Fe, recently was awarded the Legion of Merit by Maj. Gen. Carl R. Gray, Jr., director general, Military Railway Service.

According to his citation, Colonel Crill, who served as commanding officer of the 710th Railway Grand Division regulating U. S. Army freight movements throughout France since late in 1944, had displayed "unusual ability for cooperating with and securing cooperation from the French officials." He had handled, the citation noted, "difficult and complicated operations of the Paris terminal in such a manner as to move unprecedented tons of supplies into, through and out of the terminal."

American Express to Represent New York Central Abroad

The American Express Company will act as the New York Central's general foreign freight and passenger traffic agent in all countries (outside of continental United States, Canada and Mexico) where the express company maintains offices, Gustav Metzman, N. Y. C. president, announced October 8. Prior to the war American Express had 61 offices in 25 countries, although at present only 23 such offices are in operation.

In announcing the N. Y. C.'s new official representative, Mr. Metzman explained that the express offices would arrange for shipment of freight from any foreign point, to any consignee in the United States, over the New York Central and connecting lines. Complete service will be available to all shippers, and through American Express-N. Y. C. bills of lading will be issued.

"American Express Company offices in foreign countries will also provide travelers with complete facilities for arranging transportation to any point in the United States," Mr. Metzman added, explaining their offices would carry the N. Y. C. emblem and act as "headquarters" for travelers abroad. Services will include sale of tickets, handling of advance train reservations, through checking of baggage to destination, and preparation of travel itineraries.

T. P. & W. Strike In Complete Deadlock

President McNear and union officials now await each other's next move

With the strike of employees of the Toledo, Peoria & Western entering into its third week, and the railroad completely tied up, there appeared to be little chance that operations would be resumed in the near future. Both George P. McNear, Jr., president of the T. P. & W., and leaders of the various unions which called the strike as soon as the railway was returned to its owners after being run by the federal government since 1942, have assumed a "stand pat" attitude.

The management-labor controversy dates back to September 13 when a group of seven labor leaders addressed a letter to Mr. McNear, asking that agreements be signed between 12 unions and the management of the T. P. & W. This letter was answered on September 15 by R. B. Gifford, acting superintendent of the T. P. & W., who declined the proposal as follows:

"Inasmuch as none of the organizations mentioned in, or signing, your letter represented any class of our employees while we were operating our properties immediately prior to the seizure on March 22, 1942; since we are not concerned with any agreements which any of your organizations may claim to have made with the Office of Defense Transportation subsequent to March 22, 1942; and since it is impossible at this time to determine the wishes in regard to representation of the people who will be in our employ on or after October 1, 1945, it would not be proper to sign agreements with your organizations as you request, or to meet with you on September 19, 1945."

McNear Statements—On September 15, Mr. McNear issued the following statement: "It is our desire to re-employ those who were working for us at the time of the seizure, on March 22, 1942. In addition, we will offer new employment to as many as possible of our former employees in train and engine service, who were not employed by us on March 22, 1942, except those who engaged in acts of violence against the railroad or its employees. We will also offer employment to as many as possible of others who have been engaged by the federal manager."

On September 24, Mr. McNear gave to President Truman a statement of the railroad's plan to grant voluntary pay increases as of October 1. The statement pointed out that practically all employees will receive higher rates of pay than when the railway

was under federal control, the letter to President Truman following newspaper publication of an announcement that railway labor organizations had asked the President to revoke the order returning the T. P. & W. properties and to postpone relinquishment of government control until the company had made agreements with railway organizations as to pay rules and working conditions.

On September 26, Mr. McNear wrote to H. H. Best, then serving as general manager for the federal manager of the railway, as follows:

"In response to our inquiry of September 15, we feel assured of a sufficient number of employees to take over the operations, and place them upon the basis which we will desire, within a very short time. We would, without hesitation, undertake to handle all traffic that may be offered to us, if we could feel certain that there would be no unlawful interference with our operations."

"Rumors" of Planned Violence—"While, during the past 30 days, rumors have come to us that a new and enlarged program of violence was intended, including personal attacks, shootings and dynamiting of bridges, which would be designed to prevent anyone from working on our railroad after October 1, we had not paid much attention to them. However, on September 23 there appeared in an important Chicago newspaper a statement of a highly placed brotherhood official which indicated that we must take these rumors into serious account. We are thus forced to take such steps as we can that will protect our shippers from any unlawful attempts that may be made to interrupt our service.

"Therefore, we shall issue an embargo to become effective at 12:01 a. m. October 1, 1945, so as to limit the traffic thereafter to that which we believe we will then be able to handle. We respectfully ask that you take the necessary steps to clear the railroad of all traffic prior to that date, so that the property of our shippers will not be in any danger from unlawful conduct."

Mr. McNear followed this on September 28 with a telegram to all connecting lines, stating that, effective 12:01 a. m., October 1, the T. P. & W. was embargoing all shipments of every character, both carload and less-than-carload.

Management's Terms—On September 29, Mr. Gifford offered the following settlement of the dispute to the union officers: "We will continue in effect, until changed in the manner prescribed or permitted by law, the federal manager's existing rates of pay, rules and working conditions, insofar as they are applicable to the railroad's operations subsequent to 12:01 a. m. October 1, 1945. We also propose to take into our employ the employees of the railroad on March 22, 1942, and the present employees of the federal manager, except those who engaged in acts of violence. Each such person will be offered employment (subject to usual medical examination) with full seniority from the date of his last continuous employment by the railroad or by the federal manager to October 1, 1945, and will be put in service in accordance with such seniority."

On October 1, Mr. McNear issued a further explanatory statement as follows: "In a sincere effort to avoid interference with the operation of our railroads, we have conceded to the brotherhoods every point that they asked except their demand that we rehire approximately 25 former employees who clearly were engaged in serious violent acts against the railroad or its people in late 1941 and early 1942. These acts included the beating and stoning of our employees, shootings at trains and attempts to wreck trains and dynamite bridges.

"In a conference with the brotherhood officials on September 29, no question was raised as to any loop-hole or misunderstandings, and it was clearly understood at that conference that the only issue involved was whether the railroad should rehire these people who had engaged in violence."

L.N.E.R. Enlists Aid of British Travelers in Car Design

There is now being conducted on 31 principal daytime and night trains of the London & North Eastern (England) what is believed to be the first survey of public opinion on travel comfort ever to be attempted on British railroads. In a 14-page booklet, entitled "Design for Comfort," passengers are invited to answer 12 leading questions having to do with coach design and dining car service—a matter much to their interest, the railroad explains, since orders are soon to be placed for a large number of new passenger cars, and "passengers are most cordially invited to help in ensuring that these conform to their own ideas of perfection in travel comfort."

There are the usual questions as to type of travel preferred—coach or compartment, choice of seat design, type of windows, overhead or individually controlled lighting, kind of luggage rack, choice as to quiet or gay interior appointments, and type of meal preferred both in dining and buffet cars. Should he have additional suggestions, there is space provided for the traveler's convenience.

Canada's Railways Declare Coal Freight Rates "Basically Low"

In reply to criticism of local freight rates made particularly in western Canada to the Dominion's Carroll Commission on Coal, the Canadian Pacific and the Canadian National submitted a joint brief to the Commission at Ottawa, declaring Canadian freight rates to be "basically low."

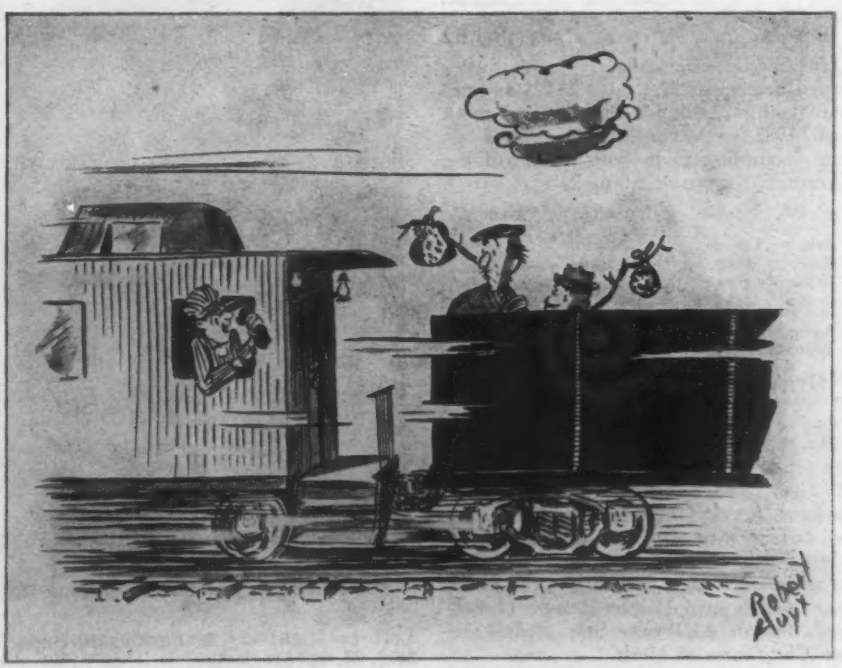
The brief, which was presented by A. K. Dysart, of Montreal, for the C. N. R., and K. D. M. Spence, also of Montreal, for the C. P. R., said that "whenever general increases in Canadian rail rates have been established in the past, advances in the rates on coal have been negligible in comparison with those made applicable to general merchandise and many other commodities. The fact is, Canadian coal rates have been for many years, and are today, basically low."

One suggestion in the brief, to the effect that freight rates were primarily the concern of the Board of Transport Commissioners, was objected to by Justice W. F. Carroll, commission chairman. He said the coal commission was reporting through Reconstruction Minister Howe to Parliament, which was the final authority.

The railways argued their freight rates have been frozen by the Prices Board for more than three years, but that labor and material costs have shown substantial increases. A suggestion that special rates

* * *

Superservice for the Post-War Traveler



"Droopy Is Wanted on the Phone"

could be provided for coal moved in trainload lots from Alberta to Ontario was called impossible because of operating conditions. No railroad in either Canada or the United States had ever operated a solid commercial train on a transcontinental basis, the railroads said.

Freight Car Loading

Loadings of revenue freight for the week ended October 6 totaled 767,985 cars, the Association of American Railroads announced on October 12. This was a decrease of 64,278 cars or 7.7 per cent below the preceding week, a decrease of 109,050 cars or 12.4 per cent below the corresponding week last year, and a decrease of 138,372 cars or 15.3 per cent below the comparable 1943 week.

Loading of revenue freight for the week ended September 29, totaled 832,263 cars, and the summary for that week, as compiled by the Car Service Division, A. A. R., follows:

Revenue Freight Car Loading

For the Week Ended Saturday, September 29

District	1945	1944	1943
Eastern	149,280	167,976	171,200
Allegheny	174,226	199,413	194,024
Pocahontas	56,961	56,991	56,759
Southern	118,860	124,733	122,487
Northwestern	137,766	144,270	153,392
Central Western	134,248	145,638	137,861
Southwestern	60,922	73,606	74,921
Total Western Districts	332,936	363,514	366,174
Total All Roads	832,263	912,627	910,644
Commodities			
Grain and grain products	53,912	50,012	53,496
Livestock	23,212	22,927	23,508
Coal	165,407	179,869	179,272
Coke	11,482	14,205	14,903
Forest products	37,756	44,858	45,941
Ore	68,333	73,419	84,665
Merchandise l.c.l.	110,510	109,921	102,239
Miscellaneous	361,651	417,416	406,620
September 29	832,263	912,627	910,644
September 22	837,293	897,883	907,311
September 15	856,105	891,486	902,766
September 8	730,628	825,166	834,670
September 1	860,439	897,603	901,075
Cumulative Total, 39 Weeks	31,997,114	32,746,065	31,797,865

In Canada.—Carloadings for the week ended September 29 totaled 73,921 as compared with 73,489 for the previous week and 76,987 for the corresponding period last year, according to the compilation of the Dominion Bureau of Statistics.

Totals for Canada:	Total Cars Loaded	Total Cars Rec'd from Connections
Sept. 29, 1945	73,921	32,066
Sept. 30, 1944	76,987	38,371
Cumulative Totals for Canada:		
Sept. 29, 1945	2,690,323	1,390,517
Sept. 30, 1944	2,727,369	1,497,383

Gray Presents 32 Awards to 724th Railway Battalion

At a recent ceremony in Paris, held in the grounds of the Louvre, Maj. Gen. Carl R. Gray, Jr., director general, Military Railway Service, bestowed on 32 officers and enlisted men of the Pennsylvania-sponsored 724th Railway Operating Battalion an array of awards, including three Silver Star Medals, two Purple Hearts, 14 Soldier's Medals, 13 Bronze Star Medals and two Certificates of Merit.

In making the presentation, General Gray commented that "of all the times it has been my pleasure to bestow medals, it is the first time any one outfit ever received at one time the number that are bestowed here today." Apart from individual bravery and service, the general declared this "is the right kind of an outfit, or they could not have produced so many exceptional men."

The three Silver Star winners included Cpl. Noll C. DeLaughder, of Bellefontaine, Ohio; Pfc. Arthur E. Mee, Melrose Park, Ill.; and Pfc. Horace L. Smith, Athens, Ala.

The Soldier's Medal went to Lt. Col. James D. Shea, of Ottumwa, Ia.; Maj. Sidney P. Wagner, Grand Rapids, Mich.; Capt. Oscar T. Albaugh, Steubenville, Ohio; S/Sgt. Cecil Ginger, Pine Bluff, Ark.; Sgt. Herbert L. Baldwin, Malden, Mass.; Sgt. Gerald C. Brearton, Brewster, N. Y.; Sgt. Arthur Lamb, Jr., Ft. Scott, Kan.; Sgt. Gerald J. McMillian, Huntington, W. Va.; Sgt. Herschel L. Wade, Fairfield, Ill.; T/4 Joseph H. Geddes, Morrisville, Pa.; T/4 James A. Shiflett, Cedartown, Ga.; T/5 James F. Clark, Ashley, Pa.; Pfc. Guy E. Magee, Jr., Adams Diggings, N. M.; and Pfc. Johnnie A. Massey, Ludlow, Miss.

The Bronze Star Medal was awarded to Capt. Roger W. Speidel, Hollidaysburg, Pa.; Capt. William C. Fleck, Hazleton, Pa.; 1st Lt. Kenneth J. Lally, New Castle, Pa.; 1st Lt. Charles L. Smith, Tacoma, Wash.; S/Sgt. James E. Strong, Haddin, Ky.; Sgt. Charles O. Parish, Alton, Ill.; T/4 Ethridge N. Andrews, Richmond, Va.; T/4 Boris Pando, Lorain, Ohio; T/5 James T. King, Enterprise, Ala.; T/5 George J. Kolar, Erie, Pa.; T/5 David S. Preston, Texarkana, Tex.; Pfc. L. D. Clark, Jet, Okla.; Pvt. Martin Miller, Brooklyn, N. Y.

The Purple Heart Medal went to Pvt. Brady G. Painter, of Plymouth, W. Va., and to Cpl. Noll DeLaughder, Bellefontaine, Ohio.

The Certificate of Merit was awarded to 1st Lt. Arthur W. Miller (address not given.)

Railroad Tax Figures Corrected

Certain figures in the compilation of Class I railroad income and expense data for August and the eight months of 1945, a summary of which appeared in *Railway Age* of October 6, page 568, have been revised by the Association of American Railroads. The changes affect the August, 1945, operating expenses, operating ratio, and taxes, and the total taxes for the eight months. The following tabulation shows the revised figures:

CLASS I RAILROADS—UNITED STATES

	1945	1944
Month of August		
Total operating revenues	$755,218,186	$836,183,413
Total operating expenses	547,263,363	538,488,861
Operating ratio—per cent	72.46	64.40
Taxes	106,717,679	177,959,260
Net railway operating income (Earnings before charges)	86,683,195	101,485,622
Net income, after charges (estimated)	51,300,000	60,346,451
Eight Months Ended August 31, 1945		
Total operating revenues	$6,251,217,314	**$6,281,293,192**
Total operating expenses	4,292,026,125	4,141,323,456
Operating ratio—per cent	68.66	65.93
Taxes	1,112,648,033	1,254,694,612
Net railway operating income (Earnings before charges)	722,678,154	753,656,408
Net income, after charges (estimated)	445,000,000	447,205,277

AM and FM Radio Compared

Frequency modulation and amplitude modulation radio systems were tested simultaneously under identical operating conditions utilizing equipment of comparable engineering specifications in experiments concluded October 1 by the Atchison, Topeka & Santa Fe and the Farnsworth Television & Radio Corporation.

The tests, conducted in the Santa Fe Corwith yards in Chicago, indicated that both FM and AM systems are capable of rendering satisfactory service in railroad operation, according to engineers in charge of the experiments. Both systems, it was pointed out, have certain inherent advantages, and a choice would depend on the economic, installation, operation and main-



Left to Right—J. A. Parkinson, Superintendent of Communications, Santa Fe; Maj. H. A. Mugliston, British Army Staff, Washington, D. C.; and Capt. Pierre Boucheron, U. S. N. R., Conducting Tests to Determine Relative Efficiency of Frequency and Amplitude Modulation of Radio "Carrier" Waves

Selected Income and Balance-Sheet Items of Class I Steam Railways

Compiled from 132 reports (Form IBS) representing 136 steam railways
(Switching and Terminal Companies Not Included)

Income Items	All Class I Railways			
	For the month of July		For the seven months of	
	1945	1944	1945	1944
1. Net railway operating income	$97,126,391	$99,745,523	$635,994,953	$652,170,785
2. Other income	14,596,906	16,919,569	108,208,124	105,656,616
3. Total income	111,723,297	116,665,092	744,203,077	757,827,401
4. Miscellaneous deductions from income	2,538,810	3,206,361	17,926,625	24,939,074
5. Income available for fixed charges	109,184,487	113,458,731	726,276,452	732,888,327
6. Fixed charges:				
Rent for leased roads and equipment	12,027,524	13,218,232	86,767,463	88,128,269
Interest deductions[1]	31,235,607	38,838,764	226,169,051	241,946,714
Other deductions	114,769	120,653	779,904	903,567
Total fixed charges	43,377,900	52,177,649	313,716,418	330,978,550
7. Income after fixed charges	65,806,587	61,281,082	412,560,034	401,909,777
8. Contingent charges	2,816,426	2,806,477	19,728,077	19,811,847
9. Net income	62,990,161	58,474,605	392,831,957	382,097,930
10. Depreciation (Way and structures and Equipment)	27,861,604	26,691,328	193,622,347	186,133,203
11. Amortization of defense projects	20,303,731	15,787,954	138,024,302	104,792,611
12. Federal income taxes	87,727,736	122,206,025	685,759,281	766,102,774
13. Dividend appropriations:				
On common stock	3,204,217	3,696,590	82,584,655	75,206,875
On preferred stock	783,407	796,481	22,536,466	15,784,396
Ratio of income to fixed charges	2.52	2.17	2.32	2.21

Selected Assets and Liability Items	All Class I Railways — Balance at end of July	
	1945	1944
17. Expenditures (gross) for additions and betterments—Road	$121,335,950	.....
18. Expenditures (gross) for additions and betterments—Equipment	163,772,341	.....
19. Investments in stocks, bonds, etc., other than those of affiliated companies (Total, Account 707)	$50,921,842	$591,168,214
20. Other unadjusted debits	495,344,678	424,141,414
21. Cash	1,122,104,887	1,028,939,878
22. Temporary cash investments	1,896,496,027	1,864,366,088
23. Special deposits	259,945,552	157,923,449
24. Loans and bills receivable	649,049	171,438
25. Traffic and car-service balances—Dr.	38,482,220	45,999,272
26. Net balance receivable from agents and conductors	136,859,772	155,292,414
27. Miscellaneous accounts receivable	650,338,193	639,363,607
28. Materials and supplies	608,103,407	594,648,943
29. Interest and dividends receivable	32,792,245	24,487,974
30. Rents receivable	3,223,726	1,665,462
31. Other current assets	52,694,096	64,083,333
32. Total current assets (items 21 to 31)	4,801,689,174	4,576,941,858
40. Funded debt maturing within 6 months[2]	103,277,444	202,341,064
41. Loans and bills payable	5,354,058	12,838,386
42. Traffic and car-service balances—Cr.	192,249,854	205,893,804
43. Audited accounts and wages payable	457,843,308	452,515,925
44. Miscellaneous accounts payable	214,201,072	135,695,003
45. Interest matured unpaid	46,478,452	49,110,870
46. Dividends matured unpaid	7,764,117	7,077,111
47. Unmatured interest accrued	56,397,547	60,363,816
48. Unmatured dividends declared	12,276,356	10,018,541
49. Unmatured rents accrued	21,571,277	18,829,095
50. Taxes accrued	1,711,754,733	1,876,176,728
51. Other current liabilities	179,885,575	89,869,736
52. Total current liabilities (items 41 to 51)	2,905,776,349	2,918,389,015
53. Analysis of taxes accrued:		
U. S. Government taxes	1,542,689,040	1,710,855,293
Other than U. S. Government taxes	169,065,693	165,321,435
54. Other unadjusted credits	710,457,997	440,006,985

[1] Represents accruals, including the amount in default.
[2] Includes payments of principal of long-term debt (other than long-term debt in default) which will become due within six months after close of month of report.
Compiled by the Bureau of Transport Economics and Statistics, Interstate Commerce Commission. Subject to revision.

tenance factors involved in individual projects.

"This test is part of an extensive research program initiated nearly two years ago by the Santa Fe to determine the maximum efficiency that can be obtained by the adaptation of radio systems to railway operation," F. G. Gurley, Santa Fe president, said.

The equipment tested for both AM and FM employed the "auto pulse" checking system, in which a small light flashes in the locomotive cab every few seconds when the engine is in operating range of another radio-equipped unit. Because of its safety factor, it was pointed out, this new check system will have many applications in the railway field. The pulse technique employed in this system is an adaptation of a war-time identification development whereby friendly aircraft can automatically identify each other.

The tests were made in the presence of W. N. Krebs, chief engineer of the Safety and Special Services Division of the Federal Communications Commission; Major H. A. Mugliston of the British Army staff, Washington, D. C., and John L. Niesse, New York Central, chairman, and other members of the Train Communications Committee of the Association of American Railroads.

Second Pullman Strike Called

In less than one hour after normal production of troop sleeping cars was resumed last week at the Haskell & Barker plant of the Pullman-Standard Car Manufacturing Company, Michigan City, Ind., nearly 1,400 employees were again prevented from working by the calling of a second strike. The employees had returned to work after the United Automotive, Aircraft and Agricultural Implement Workers Union (CIO) agreed to withdraw its picket line, approximately 300 having returned while the picketing was going on.

The second strike, called on October 8, occurred when 50 welders decided not to work with 48 of the men who returned to work during the first strike. The company then discharged the 50 men and the plant was closed when other employees protested the discharge order by refusing to work.

A. A. R. Embargo on Carload Export Freight in N. Y. Port

As the strike of longshoremen in the port of New York moved into its ninth day, the Car Service Division, Association of American Railroads, on October 8 issued Embargo No. 589 on all carload export freight consigned to the New York port, as well as Newark, N. Y., whether or not covered by Office of Defense Transportation permit.

The A. A. R. order was issued to relieve the pile-up of freight in the New York port. The exceptions which the embargo allows are on Army and Navy freight.

Supply Officer Awarded for Stores Work

A furloughed Stores department employee of the Santa Fe, Maj. Albert F. Marth, formerly railway supply officer of the 710th Railway Grand Division, and now with the 706th Railway Operating Battalion, was awarded the Bronze Star Medal by Col. Louis G. Jamison, commanding officer of the 706th, in ceremonies at Brussels, Belgium, it has been announced in "The Yankee Boomer," Military Railway Service publication.

The award was given for "meritorious service in connection with military operations as railway supply officer, 710th R. G. D., from September 1, 1944, to May 1, 1945."

Maine Central Officer Asks All Transport to Pay Own Way

With railroads spending millions of dollars for new passenger equipment and plant improvements to provide better transportation, "it is high time the airlines, no longer in their infancy . . . started paying their own way," Robert M. Edgar, assistant to the executive vice-president of the Maine Central, recently told the Portland (Me.) Kiwanis Club.

Admitting railroads to have come through their wartime experience, "pretty well worn, and looking a little unkempt," Mr. Edgar promised that the public will be served better than ever before in the coming competitive battle, and he added, no matter how people travel, by train, bus or airplane, if each of these forms of transportation is treated equally and pays its own way, the public will pay less in the end.

Looking to Portland with its airport representing an investment of federal and city funds of about one million dollars, Mr. Edgar asserted there was "not only no income from that investment, but there is a substantial out-of-pocket loss every year." Thus far in 1945, the railroad officer noted, the state has spent $6,000 for snow removal from the airport and the city $3,400.

"The state collects a tax on aviation gas that contribtues to their share of this expense," he observed, "but to the city it is all expense." He added, "The railroads in Portland pay a heavy tax each year to the state and city, but we remove our own snow."

The fundamentals of all business, he said, are pretty much the same, and he likened railroading to running a department store, making paper or canning fish. "You have got to produce something at a cost that will enable people to buy, at a price that will allow you to pay your costs of operation and have enough left over to finance your business, and give the owners a return on the money which they have invested in your tools and plant," Mr. Edgar explained.

New Haven Extends Its Personnel Program

The New York, New Haven & Hartford this week announced an enlarged employee training and education program, calling for an extension of all personnel activities. Immediate consideration is to be given to the railroad's returning servicemen, while long-range plans call for cooperation with public and trade schools to provide training of "railroad-minded" students while still in school.

The program will be carried out under the direction of Harold W. Quinlan, formerly manager of dining car service, who has been appointed assistant manager, personnel.

Under the new plan, employees will be given considerable latitude in their choice of study, with training permitted in phases other than an employee's own department.

Purchases and Stores Division Will Hold 1946 Meeting

Following an all-day meeting of the general committee of the Purchases and Stores Division of the Association of American Railroads, at the Palmer House, in Chicago on October 4, it was announced that a regular two-day annual business meeting will be held during 1946. The time and place of the convention have not yet been decided, although it is evident that the division plans on resuming all of its pre-war activities.

The Chicago meeting was presided over by E. J. Lamneck, chairman (general purchasing agent, Pennsylvania). The general committee completed its work on subject committee assignments and personnel for the ensuing year. These subjects and the chairmen are as follows:

Subject 1—Purchases and Stores Department Manual—Recommended Rules and Practices. G. A. Goerner (chairman)—general storekeeper; Chicago, Burlington & Quincy; Chicago, Ill.

Subject 2—Standard Material Classification. W. W. Shugarts (chairman)—assistant stores manager; Pennsylvania; Philadelphia, Pa.

Subject 3—Scrap, Handling and Preparation—Classification and Sale. P. Young (chairman)—supervisor of reclamation; Atchison, Topeka & Santa Fe; Chicago, Ill.

Subject 4—Material Stock Report—Inventory and Pricing Methods and Practices. B. T. Adams (chairman)—district storekeeper; Illinois Central System: Paducah, Ky.

Subject 5—Forest Products. E. H. Polk (chairman)—purchasing agent; Southern Pacific; Portland, Ore.

Subject 3A—General Reclamation. Purchases and Stores Division. T. S. Edgell (chairman)—division storekeeper; Gulf, Mobile & Ohio; Jackson, Tenn.

Subject 9—Fuel—Coal, Fuel Oil and Diesel Fuel Oil. M. H. McGlynn (chairman)—fuel agent; Chicago, Rock Island & Pacific; Chicago.

Subject 13—Stationary and Printing. G. E. Perrot (chairman)—stationery supervisor; Seaboard; Portsmouth, Va.

Subject 14—Fire Prevention—Safety Practices—Purchasing and Stores Department. L. J. Ahlering (chairman)—purchasing agent; Chicago & Eastern Illinois; Chicago.

Subject 15—Storage and Material Handling Facilities. N. B. Coggins (chairman)—general storekeeper; Southern; Washington, D. C.

Subject 16—Simplification and Standardization of Stores Stock. L. E. Field (chairman)—supervisor of material standards; Boston & Maine; North Billerica, Mass.

Subject 19 — Capacity Loading and Prompt Handling of Cars of Company Materials and Reduction of Non-Revenue Ton Miles. D. H. Phebus (chairman)—assistant general storekeeper; Chicago, Milwaukee, St. Paul & Pacific; Milwaukee, Wis.

Subject 20—Joint Committee—Metric System. D. C. Curtis (chairman)—chief purchasing officer; Chicago, Milwaukee, St. Paul & Pacific; Chicago.

Subject 21—Purchasing, Storage and Distribution of Equipment and Supplies Used in Dining Cars, Hotels and Commissaries. J. F. McAlpine (chairman)—assistant purchasing agent; Chicago, Burlington & Quincy; Chicago.

Subject 23—Conservation of Materials in Light of Improved Methods and Research. S. A. Hayden (chairman)—purchasing agent; Missouri-Kansas-Texas; St. Louis, Mo.

Subject 29—Exchange of Materials. T. E. Savage (chairman)—purchasing agent; Erie; Cleveland, Ohio.

Subject 34—Maintenance of Way and Construction Materials (Including Signal, Telephone and Telegraph)—Purchasing, Storing and Distribution. W. R. H. Mau (chairman)—purchasing agent; International-Great Northern; Houston, Tex.

Subject 37—Stores Department Organization, Practices, Records and Stock Control. C. K. Reasor (chairman)—assistant manager stores; Erie; Hornell, N. Y.

Subject 40—Loss and Damage Prevention—Salvage and Disposition. J. U. King (chairman)—general storekeeper; Atlantic Coast Line, Wilmington, N. C.

Subject 42—Diesel Engine Parts—Purchasing and Storekeeping. F. J. Steinberger (chairman)—asst. general purchasing agent; Atchison, Topeka & Santa Fe; Chicago.

August Earnings in Canada

The two principal Canadian railways reported August earnings and expenses as follows:

Canadian National

August	1945	Increase
Gross	$38,168,000	$132,000†
Expenses	30,056,000	2,361,000†
Operating Net*	$8,112,000	$2,229,000
8 Months		
Gross	$291,882,000	$1,522,000
Expenses	235,288,000	536,000
Operating Net*	$56,594,000	$986,000

Canadian Pacific

August		
Gross	$26,792,906	$1,638,286†
Expenses	26,976,542	5,864,104†
Net*	$816,364	$4,225,818
8 Months		
Gross	$210,498,864	$176,495
Expenses	188,566,388	1,174,470
Net*	$21,932,476	$997,975†

* Net as shown in this tabulation, for the C. N. R., is equivalent to "Net Operating Revenue" in U. S. accounting terminology, while the net shown for the C. P. R. corresponds to "Net Railway Operating Income" in U. S. terms.
† Decrease.

C. & O. Installs 30 Miles of C. T. C. on Single-Track

With the installation of centralized traffic control on 30 miles of single-track line between Orange and Charlottesville, Va., the Chesapeake & Ohio can now average 21 passenger and 30 freight trains through this territory daily. Prior to the installation of C. T. C. on September 28, the C. & O. moved trains through this section on train orders and automatic block signals.

Signals for governing movements into and out of passing sidings, as well as the switches at the ends of the sidings and the junction at Gordonsville, Va., are now controlled by an operator located in the new fireproof tower at Gordonsville, junction point of the Piedmont and Washington sub-divisions. The newly-installed control machine consists of levers for operating the switches and signals, as well as a track diagram of the entire territory, and colored lights on the track model show the location of trains on the track at all times.

Radio in Railroading to Highlight New York Meeting

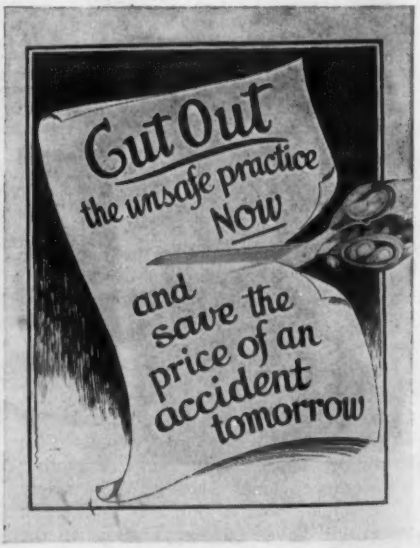
"Radio's Place in Railroading" is the subject to be discussed at the October 24, 7:45 p. m., meeting of The Railroad Enthusiasts, Inc., at Grand Central terminal, New York. W. A. Moore, general superintendent of electric transmission and communications, New York, New Haven & Hartford, will tell how radio is being applied to train operation, while George H. Phelps, radio engineer, Westinghouse Electric Corporation, will present the manufacturer's findings. Mr. Phelps installed the Westinghouse equipment which was tried out on the New Haven.

In addition, there will be a showing of the New Haven motion picture, "This Is New England," as well as election of officers for 1946.

N. Y. C. Again Rolls Out the Red Carpet

Passengers boarding the "Twentieth Century Limited," New York Central streamliner between New York and Chicago, on October 5 once again walked the 197-ft. crimson and gray strip of carpet down the ramp and along the train platform, for the first time since 1942. Made especially for this train's use, the name Twentieth Century is woven into it. Except for the war years, passengers entraining on the Century have walked such a carpet since 1922.

* * *



Poster No. 266, November Installment of the "All the Year—Every Year Safety Program," Which Is Now Being Distributed by the Safety Section, Committee on Education, A.A.R.

With the Government Agencies

Ending Ex Parte 148 Opposed by Railroads

Ask I.C.C. to deny motions seeking termination of rate-increase case

Replying to the Secretary of Agriculture, the National Association of Railroad and Utilities Commissioners, and various state regulatory agencies, who asked the Interstate Commerce Commission to set a date not later than next March 2 for the expiration of the freight rate increases granted the railroads in Ex Parte 148, but since suspended, the railroads have taken the position before the commission that the action sought in these motions would constitute a substantial modification of the terms on which the increases were approved, for which modification the parties named have not made a sufficient showing.

As noted in *Railway Age* last week, the motions for termination of the Ex Parte 148 proceedings outlined the following argument: (1) the increase was authorized originally for a period to expire six months after the termination of the present war; (2) hostilities have ceased; (3) the conditions which led the commission to approve the increase no longer exist; and therefore, (4) the authorization should be conclusively set aside by the specified date, rather than to wait for a formal termination date. But such action, the railroads said, would constitute, not an interpretation of the order, but a modification requiring substantial grounds.

The language of the order in Ex Parte 148 is "too clear and definite to permit of resort to interpretation," they went on to say. Decisions of the Supreme Court going back many years uniformly hold that where an action is contingent on termination of a specified war, the date of termination, unless otherwise provided by Congress or the President, is the date of ratification of the peace treaty concluding it. "The war is not yet over in fact any more than it is over as a matter of law," the carriers asserted, and recent statements by President Truman were quoted to uphold that view. Since the war is not over, commission action fixing a definite date for the expiration of the rate increases would, they declared, constitute a modification of the order now associating its expiration with the termination of the war.

Conceding the commission's power to modify its order, the carriers argued that such modification should properly be based on a showing of harm or disadvantage to the protesting parties, or other valid reason, which they insisted, has not been adduced. By fixing on six months after the termination of the war, the commission, following a precedent established by Congress, made some allowance for the readjustments that might be accomplished between the cessation of hostilities and the formal termination of war. If the date is to be fixed with relation to the end of actual fighting, it should provide for an adequate readjustment period, which would have to be "much longer than six months."

Moreover, said the railroads, since the carriers already have consented to a further suspension of the rate increases at the commission's discretion, "no possible injury" can come to the protesting parties if the proceedings are continued, as originally provided, so that the uncertainties arising from the war can clear up sufficiently for the roads to know whether or not to exercise their reserved right to seek from the commission a reinstatement of the Ex Parte 148 increases.

Four N.M.B. Mediators Named

During September the National Mediation Board appointed four men to its staff of mediators, Clarence G. Eddy, Frank C. Bandel, Alexander D. Penfold, and Warren S. Lane. According to the announcement by Secretary Robert F. Cole, Mr. Eddy has had 14 years railroad service, including 8 years adjusting disputes under the Railway Labor Act, principally on the Central Vermont; Mr. Bandel has had 25 years experience in the building industry and 6 in federal government service, including 12 years in adjusting labor disputes; Mr. Penfold has had 25 years railroad service, including 10 years adjusting disputes, principally on the Chicago South Shore & South Bend; and Mr. Lane has had 12 years railroad service, including 5 years adjusting disputes under the act, principally with the Pittsburgh & West Virginia.

Operation of Ex-Barge Grain Rates Is Delayed

The Interstate Commerce Commission, acting, according to Secretary W. P. Bartel, "solely in obedience to the injunction" issued by a special district court, has suspended from October 5 to May 5, 1946, the operation of specified tariff schedules stating new individual joint rates prepared in compliance with the terms of the commission's order in I. & S. No. 4718, dealing with ex-barge grain rates from Chicago to Official territory. As noted in *Railway Age* of March 10, page 461, this order prescribed differential rates applying to ex-barge grain intermediate between the local rates and the ex-lake or ex-rail proportionals.

The Supreme Court in 1943 upheld the commission's refusal to require that ex-lake rates be applied to ex-barge grain, and the intermediate differentials later prescribed resulted from its further consideration of the arguments of the barge interests for lower rates. The present litigation has resulted from dissatisfaction with these differentials.

Land Grant Repealer Approved by Senate

Amended Boren bill passed as compromise on effective date ends Bilbo filibuster

Senate passage of H. R. 694, the House-approved Boren bill to repeal remaining provisions of the land-grant-rate law, came on October 4 when Senator Bilbo, Democrat of Mississippi, dropped his filibuster in return for an amendment which would make October 1, 1946, the effective date of repeal. Because of the differing Senate and House versions, the bill was sent to conference.

In addition to the new effective date the bill was further amended in the Senate to add the so-called "veterans' farms fund" provisions that had been proposed as a Senate interstate commerce committee amendment to H. R. 694's predecessor which died when the previous Congress adjourned sine die last December. The railroads would be unaffected by the veterans' farms fund provisions, except that more paper work on land-grant traffic would be involved in the requirement that freight bills rendered the government show the difference between applicable land-grant rates and full commercial rates.

Veterans' Fund Amendment—In general the amendment values the granted lands still held by the railroads at $68,272,770, and provides that when that amount in "savings" following the bill's enactment date has been reported by the comptroller general, it will be authorized to be appropriated as a veterans' farms fund. The fund would be administered by the Secretary of the Interior and the Secretary of Agriculture for the purchase and improvement of lands for subdivision into farms for sale to veterans of World War II. The amendment was offered by Senator McFarland, of Arizona, in behalf of himself and nine other senators from western states, including Chairman Wheeler (Democrat of Montana) of the committee on interstate commerce, who was in charge of the bill on the floor of the Senate. Senator Reed, Republican of Kansas, called the provision a "cock-eyed amendment which has no place in this bill."

Meanwhile other amendments being discussed last week were not formally proposed on the Senate floor. As noted in the *Railway Age* of October 6, page 573, these included the amendment which Senator Johnston, Democrat of South Carolina, considered offering to delay the effective date of repeal until all sections of the country are accorded the same freight rates on both class and commodity traffic, and a threatened Bilbo amendment to deny the

(*Continued on page 621*)

Straight Pay 26.9% Higher than in 1940

I. C. C. data on rail wages disclose 730% increase in overtime total

In view of the service of union demands on the carriers for substantial increases in hourly wage rates, as well as other adjustments in working arrangements, the analysis of hourly earnings of railway employees prepared by the Bureau of Transport Economics and Statistics of the Interstate Commerce Commission, and set forth in the latest edition of its "Monthly Comment," is particularly timely.

The bureau's study shows for the first six months of this year, as compared to the same period in 1940, for all Class I road employees and the principal occupational groups, both the average straight time hourly earnings and the average hourly earnings based on all time paid for, including straight time, overtime, both punitive and *pro rata*, and all other paid time. On the straight time basis, the percentage increases in hourly earnings, which, as shown in the accompanying table, ranged from 21.4 per cent for the train and engine service group to 36.4 for maintenance of way and structures, reflected the results of the wage adjustments effected in the December, 1941, and January, 1944, settlements of wage disputes.

Average Hourly Earnings—Six Months Ended With June

Group	Straight time			All time*		
	1945 Cents	1940 Cents	Increase Per cent	1945 Cents	1940 Cents	Increase Per cent
Clerical and general	88.7	70.4	26.0	91.5	70.7	29.4
Maintenance of way and structures	70.8	51.9	36.4	75.1	52.5	43.0
Maintenance of equipment and stores	90.4	69.7	29.7	96.7	70.3	37.6
Transportation:						
(a) Other than train and engine	81.4	64.1	27.0	84.1	64.7	30.0
(b) Switch tenders and hostlers	94.6	73.8	28.2	99.1	74.8	32.5
(c) Train and engine	110.1	90.7	21.4	114.0	92.3	23.5
Total, all groups	90.0	70.9	26.9	94.4	71.9	31.3

* Includes overtime (punitive and pro rata) and all other time paid for.

Big Rise in Punitive Overtime—In this connection it was pointed out that the total compensation for punitive overtime (that paid for at rates in excess of straight time rates) paid to employees on an hourly basis, including the overtime of train and engine service employees, amounted in the first six months of 1940 to $31,362,956. In the first six months of 1945 it amounted to $260,305,075, an increase of about 730 per cent. In the first half of 1940 the compensation for punitive overtime was 3.8 per cent of the total compensation paid employees; in the first half of 1945 it was 14.6 per cent.

Another matter to receive the bureau's attention was the utilization of freight car capacity, that is, the extent to which the full capacity of cars has been used, since 1939. This information is represented by the ratio of actual net ton-miles (revenue and non-revenue) to "capacity ton-miles," the latter being the figure derived by multiplying the total loaded and empty car-miles by the average carrying capacity per car.

As the comment indicated, capacity ton-miles may be utilized more intensively either by loading cars more heavily or by reducing their movement empty. Special types of cars, refrigerator and tank cars particularly, usually involve a heavy empty return movement, although war-time conservation expedients have led to considerable recent use of "reefers" to carry merchandise in the direction of normal empty movement. Thus a substantial increase in tank or refrigerator car traffic, accompanied ordinarily by a corresponding increase in empty mileage, will not generally increase the ratio of net ton-miles to capacity ton-miles. Moreover, carload minimum tariff rates serve to keep down the ratio, particularly where small capacity cars are not available in adequate numbers.

Car Utilization Ratios—Beginning in 1939, the ratio of net to capacity ton-miles has risen consecutively from year to year, the bureau's data showed, thereby reflecting not only the actual increase in traffic resulting from the war but also the war-time regulations of the Office of Defense Transportation, involving increased loading of individual cars, loading in normally empty movements, and short-route return of empties

The per cent of net to capacity ton-miles reported for the past six years was as follows: 1939, 33.7; 1940, 34.1; 1941, 36.1; 1942, 39.6; 1943, 42.2; and 1944, 42.2. A somewhat higher ratio was attained in the first half of 1945, when the January and February percentages were, respectively, 45.8 and 46.7, but the bureau pointed out that these peaks no doubt resulted from the traffic congestion and resulting embargoes in those months which were brought on by severe weather conditions. The July, 1945, ratio, the latest available, was 42.4.

In contrast to the better utilization of freight cars thus indicated, the latest data on the rate of return on property investment for the Class I roads reveal a substantial decrease for the year ended June 30, as compared with the preceding year. The bureau's comment showed first the figure reported by the Association of American Railroads, which was 4.34 for the year ended June 30, 1944, as compared to 3.91 for the year ended June 30, 1945, a reduction of 9.9 per cent. This ratio was arrived at by using what the bureau terms a "non-depreciated investment base," and the comment went on to give ratios developed by other methods.

"Adjusted" Rate of Return—Because the A. A. R. method, as outlined by the bureau, makes no allowance in the investment base for either accrued depreciation or amortization of defense projects, and because the base used includes cash and sup-

(*Continued on page 620*)

Congress Is Urged to Pass Bulwinkle Bill

But Attorney General is not in step with commissions and the railroads

A comprehensive and carefully documented case for the conference method of making railroad rates, regulated by the Interstate Commerce Commission and legitimized by a statutory exemption of such conferences or joint action from the operation of the anti-trust laws, was presented this week by spokesmen for the commission, for a majority of the state regulatory agencies, and for the railroads, as a subcommittee of the House committee on interstate and foreign commerce began hearings on H. R. 2536, the bill introduced by Representative Bulwinkle, Democrat of North Carolina, to clarify and define the jurisdiction of the commission over carrier agreements for the making of rates and other purposes which the Anti-Trust Division of the Department of Justice and the governor of Georgia have declared to be illegal.

As the hearing opened on October 9, the views of Attorney General Tom C. Clark concerning the bill were disclosed as set forth in a letter to the chairman. As a result of its investigation of rate bureau procedures, the letter said, the department's Anti-Trust Division believes they operate to eliminate competition between carriers. Consequently the department is opposed to the passage of the Bulwinkle bill, in its present form, as it would provide immunity from prosecution under the anti-trust laws for carrier joint actions which, in its opinion, afford more encouragement to coercive and monopolistic practices than to unfettered competition.

The Attorney General's Objections.—"The failure to specify acts or classes of acts to be approved [by the commission] or to state purposes to be accomplished, and the inadequacy of the tests upon which to base a determination for granting the immunity, leave the bill in such form as to merit the closest scrutiny of Congress," the Attorney General said, and therefore, he added, "I believe that passage of the bill as presently written would tend to reverse the policy of the Congress heretofore of preserving a broad area for the play of competitive factors in the determination of transportation charges."

The contention that the bill would reverse the policy of Congress was disputed by a series of witnesses who appeared before the subcommittee to support its principles and purposes and urge its passage, with certain amendments, and the suggestion was made that what the legislation actually would accomplish, if enacted, would be a reversal of the policy of the Department of Justice.

The essential provisions of the bill were outlined in *Railway Age* of March 17, page 522, where its introduction was noted, and in the April 28 issue, page 772, where the approval of the Interstate Commerce Commission of the "general plan" of the bill was reported, along with a digest of the

amendments which the commission considered desirable to perfect it. As pointed out in a discussion, in the January 13 issue, page 149, of the commission's annual report, that body had previously recommended the enactment of legislation which would give legal sanction to carrier rate-making procedures.

I. C. C. Views.—The commission's views were elaborated by Commissioners Splawn and Aitchison as the subcommittee hearings got under way this week. Because the commission "regards legislation along the lines of this bill as necessary if the commission and the regulated carriers accomplish the purposes of the national transportation policy," Mr. Aitchison said, its enactment with certain modifications is recommended. "It has long been apparent that if our carriers are to perform their public service adequately, economically, and safely, and themselves avoid discriminations forbidden by the Interstate Commerce Act, they must confer and take joint action in many matters. . . . At times both Congress and the Executive have recognized that certain joint action by carriers was necessary," and the commission since 1888 has "frequently" referred, in its annual reports, "to the practical necessity for collective action by the carriers it regulates."

After reviewing legislative trends since the passage of the Sherman Anti-Trust Act and the "somewhat varying" judicial constructions of that statute, the general result of which has been to extend the test of reasonableness and the public interest to more and more regulatory functions, Commissioner Aitchison continued as follows:

"From the standpoint of administration, the problem of the commission is greatly simplified if the carriers whom it regulates are permitted to organize so they may be dealt with as units, rather than as wholly separate and individual entities. We have been informed by many of the state railroad and utilities commissions that this is also their experience. The process of negotiation between carriers and shippers for rates or for service is greatly simplified if shippers may deal with the carriers collectively. Proper functioning of this process materially aids in the development of fair and equal rate adjustments, and thus lessens the task of the regulating bodies.

Trend Toward Uniformity.—"In recent years the legislative and economic trends have been toward a greater uniformity in the rate structure of the country, and for a more stable basis for competition between the various carriers of the same or of different types. The initiative often should be taken by the carriers themselves, after conference with their patrons. Collective conference, consideration, and agreement, subject to commission approval, will facilitate these processes.

"The carriers should be permitted to do collectively and fearlessly that which the law as expressed in the Interstate Commerce Act requires of them, in the large way contemplated by the spirit of the whole act and in conformity with the national transportation policy. But they should be permitted to do this in a manner consistent with the public interest, openly, fairly, without coercion, and so as to preserve the essentials of private enterprise within the permissible bounds of the law." At the same time, "in permitting them to act collectively, proper safeguards should be set up to prevent reprehensible practices through the joint action of carriers or their organizations."

Amendments Suggested.—The amendments to the bill proposed by the commission would extend its scope to cover joint actions involving contract carriers as well as common carriers, and would make more definite and specific the standards which the commission would be required to enforce in regulating carrier joint action. So modified, its passage was urged by Frederick G. Hamley, general solicitor of the National Association of Railroad and Utilities Commissioners, speaking for the association membership generally, and informally, for at least 24 of the state commissions. The subcommittee elicited with some show of interest the fact that Mr. Hamley was authorized to advise it that the Bulwinkle bill is approved in principle by Walter R. McDonald, chairman of the Georgia Public Service Commission, in view of the suit being pressed by that State's governor in the Supreme Court for a finding that the conference method of making rail rates is in violation of the anti-trust laws.

It is the view of the state commissions, Mr. Hamley told the committee, that rate bureaus and similar organizations "perform a useful and necessary service in connection with the establishing, fixing and publishing of rates." Based on their experience in dealing with intrastate rates and in "full knowledge of the practical problems to be met in formulating and maintaining the complicated rate structures which are necessary today," these commissions consider joint action of carriers for the making of rates necessary, he said, but they do not think such actions should go entirely unregulated. The question is, therefore, he pointed out, where the responsibility for regulation lies. As this is a legislative process, and the I. C. C. is the representative of the legislative branch of the government, the responsibility should rest in that commission, in his opinion.

State Commission Support.—Other expressions of support for the purposes of the Bulwinkle bill, and recommendations that it be passed, were heard from William J. McBrearty, chairman of the Michigan Public Service Commission, George H. Flagg, Oregon Public Utilities Commissioner, speaking on his own behalf and also for the eleven state commissions represented in the Mountain-Pacific Conference of commissioners, and Walter E. Maloney, spokesman for the American Merchant Marine Institute, consisting of some 70 American steamship lines, for whom he urged enactment of the bill to facilitate the efficient and orderly resumption of their business after its war-time cessation.

Meanwhile, however, Commissioner Aitchison had been asked by members of the committee to comment on the views expressed in the Attorney General's letter. One point about that communication that attracted his notice, he observed, was its failure to mention at all the practical necessity for some appropriate treatment of the carrier rate bureaus, some recognition, in other words, of the compulsion resting on carriers and shippers to confer in order to make rates in conformity with the provisions of the law.

Without identifying its source, he referred also to the statement, widely circulated since court action to enjoin the railroads' rate conferences has been instituted, that the I. C. C. actually passes upon only one per cent of the rate changes made in the country. In order, he said, to "squash for all time" this story, he informed the committee that an analysis of actual procedures reveals that more than forty per cent of the tariffs filed with the commission either were considered or were filed in response to its order. The one per cent figure—which might have been even lower if motor rates had been taken into consideration, Mr. Aitchison divulged—was arrived at by a purely arbitrary process, merely by contrasting the number of rail tariffs filed with the number of suspensions ordered by the commission, and so was without real significance.

Right of Independent Action.—A thorough analysis of the reasons why joint action by carriers is necessary in making rates, together with an explanation of the machinery by which such action is taken, while maintaining the right of independent action of the individual carrier and facilitating consideration of the shipper's interest, was presented to the subcommittee by a group of railroad executives. This presentation was opened by Judge R. V. Fletcher, vice-president of the Association of American Railroads, who appeared, he told the committee, in a more or less "emeritus" capacity, particularly because of his familiarity with the development of anti-trust legislation and court interpretations of that legislation, and of his experience in rate proceedings.

The Bulwinkle bill would do no more, he said, than give the railroads' rate-making practices, under I. C. C. regulation, the same status as is enjoyed by carriers not under the I. C. C., that is, air and ocean shipping, each of which already has anti-trust law exemption for its regulated joint actions. As a period of obviously sharp, though "probably wholesome" competition between the railroads and other types of transportation is certain in the post-war period, their competitors should not be permitted to retain this undue advantage over the railroads, he asserted.

One of the objections to the bill which the Attorney General had voiced, Judge Fletcher said, was its failure to limit anti-trust law immunity to rate conferences, so that, subject to I. C. C. regulation, railroads, motor carriers, pipelines, and domestic water carriers, in any or every possible combination, might engage in joint action for practically any purpose. This objection could be met, he observed, by amending the bill as suggested by the National Industrial Traffic League, to limit conferences to carriers of the same type, that is, for example, railroads alone or truckers alone, except for the purpose of establishing joint rates or through routes. This amendment

would be agreeable to the railroads, he added.

The "Vacuum" Theory.—The theory apparently subscribed to by the Department of Justice and the governor of Georgia, that the law requires each railroad to make its own rates in a complete vacuum, without reference to any other railroad, and only consulting affected shippers on sufferance, perhaps, is squarely in conflict with the requirements of the national transportation policy as prescribed by Congress, Judge Fletcher declared. That policy, he pointed out, not only is binding on the I. C. C., it is binding also on the railroads, which have responsibilities under the law that require them to take actions in conformity with the standards there set forth.

The practical situation is, then, that the carrier has to propose rates, including joint through rates. Some authority must be able to determine whether, in performing its functions, the railroad has conformed with the standards prescribed in the national transportation policy. That authority must be either the I. C. C. or the Department of Justice, acting through the courts. Congress is not equipped to decide the question in each individual case; nor are the courts. The commission is, through long experience, and the Bulwinkle bill puts the responsibility on the commission, Judge Fletcher declared. Passage of the bill, therefore, would remove the uncertainty and diversity of view as to what carriers can do by joint action, would remove their present obvious inability to go forward with confidence in the performance of their statutory duties. A sound economy is not possible without a vigorous transportation system, he added, and a vigorous transportation system is impossible unless it can go forward with confidence in the performance of its responsibility.

The A. A. R. vice-president then outlined to the committee at some length certain practical aspects of the railroads' responsibility to make rates. The Interstate Commerce Act requires carriers to make joint through rates, he noted, and a joint through rate requires action by two or more carriers that can be taken only by consultation between the parties. Not only the amount of the rate, but the division of that amount between the parties must be determined, and that determination involves a contract, which can be made only by consultation of the parties. Moreover, the act provides that railroads shall not discriminate, in establishing rates, between connecting lines. So the process of making a joint rate involves not only two or more lines which form one route; all lines that can conceivably be affected by the rate must be consulted, that is, they must confer.

But the law's requirements still would not be satisfied, Judge Fletcher demonstrated. Originating lines, in fixing rates, cannot ignore competitive points of origin, or destination, for they are required to avoid discrimination and preferential treatment as between localities, too, and in enforcing that requirement the commission has directed railroads and shippers to do what the Department of Justice says is illegal, that is, to confer.

Effect of Section Four.—Even this degree of joint action does not meet all the law's requirements, however, he reminded the committee. The relationship between local rates and joint rates established in section 4 of the act makes it impossible, generally speaking, for an individual carrier to reduce a local rate on its own line without conferring with carriers that participate with it in joint rates to avoid violation of that part of the act.

Before Judge Fletcher concluded his remarks, he was asked by Representative Hinshaw, Republican of California, two questions that evidenced the committee's appreciation of the significance of the efforts of the Department of Justice and the governor of Georgia to have the courts find the railroads guilty of anti-trust law violations in making rates by the conference method. For many years, Mr. Hinshaw remarked (alluding to the review of the development of anti-trust law and of legislation regulating carriers which Commissioner Aitchison and Judge Fletcher had contributed to the record), the railroads and the I. C. C. had had reason to assume that the action of rate bureaus was legal. What was the basis of that assumption? he inquired.

The basis, said the A. A. R. vice-president, was in a long chain of developments since the Supreme Court decided that the Sherman Act applies to combinations of railroads. Among these, he said, were the commission's approval, after investigation, of the Transcontinental Freight Bureau, expressed in a report to Congress; the failure of Congress to take any action thereon to alter the commission's position; the deliberate effort of Congress and the administration, in the early days of the "New Deal," to secure greater cooperation between carriers and avoid competitive waste; and the enunciation of the national transportation policy.

Another Question.—To this Mr. Hinshaw responded with another question: What reason do the railroads now have to believe that assumption is erroneous? The answer, said Judge Fletcher, is in the two lawsuits now pending in which the right of the railroads to take joint action is challenged; in numerous speeches by persons holding responsible positions in the government; and in the mass of material and the exhaustive argument submitted by the Department of Justice in a Senate committee investigation of rate-making procedures. There is no doubt the Department of Justice thinks the assumption erroneous, he observed, and the Supreme Court's decision in the Georgia suit leaves some doubt whether the railroads' view would prevail there.

Support for the bill was expressed on behalf of the eastern, western and southern Class I railroads, respectively, by Walter S. Franklin, vice-president in charge of traffic of the Pennsylvania, Harvey M. Johnson, chief traffic officer of the Missouri Pacific, and John E. Tilford, vice-president in charge of traffic of the Louisville & Nashville. They were preceded before the committee, however, by R. L. Williams, president of the Chicago & North Western, and by J. V. Norman, counsel on occasion for various shipper groups and for the Southern Governors Conference, but speaking on this occasion for himself in urging passage of the bill, with the proposed amendments.

The Railroads' Dilemma.—Mr. Williams told the committee that the railroads are now "faced with a situation where procedures we believe to be necessary to carry out the spirit of one law are said to be in violation of the letter of another." Under the Interstate Commerce Act, as it now stands, he said, "our rates must be just and reasonable; we must not extend to any community or person undue prejudice or undue preference, nor unduly discriminate against them. Yet the law provides no adequate guide as to the procedures we may employ in accomplishing those desirable results. As the law now stands, we must proceed at our peril."

Determination by the courts of the legality of rate-making procedures, and of other forms of cooperation between railroads not specifically provided for in the act, must necessarily be made, Mr. Williams pointed out, after and not before the procedures have been employed, and the results are "fragmentary and piecemeal and cannot furnish a satisfactory working guide for all the procedures necessary to the functioning of our complex system of transportation. . . . The situation requires the uniformity and consistency of policy which can be achieved only through vesting in a single national agency the power to decide questions of this character."

The railroads do not ask for passage of the Bulwinkle bill with any sense of guilt as to their rate-making activities, Mr. Williams' statement indicated, because "the railroad industry has not been alone in assuming the lawfulness of these natural methods of meeting developing conditions in a constantly changing world. The public has approved and participated in these processes of development and, insofar as they related to matters within the jurisdiction of state and national regulatory bodies, these processes have in general met with the approval of those bodies. Concerted, as well as individual, action by the railroads has necessarily been keyed to and in harmony with the regulatory powers and actions of those arms of government."

More Cooperation Needed.—Asserting that railroad rate conferences and committees with their free and frank discussions among shippers and carriers are essential to the conduct of modern business and transportation, Mr. Franklin emphasized in his testimony the need, if the public is to obtain the best possible railroad service, for even closer coordination of effort among railroads than there has been in the past. "The service the public requires can only be supplied by the closest possible working arrangements between carriers. The only method of securing and retaining the desired results is by means of conferences between the railroads and the shippers covering both rates and services."

Chaos would result if the present rate-making procedures were stopped, said the Pennsylvania vice-president. "In appraising the value of the committee procedure and the generally recognized fact that the relationship and stability of rates is usually more important than their precise level, we should keep in mind also the fact that

if rates are subject to fluctuation through the action of individual carriers, rate relationships which are vital to particular communities and industries would be disrupted with resulting loss of markets and definite changes in the flow of traffic. Producers would suddenly be shut out of markets which they had established themselves to supply and communities would find themselves deprived of the products on which they are dependent. If the negotiation of rate changes is to be confined to a railroad and an individual shipper, then competitive pressure will be a dominant factor in rate making and the ensuing instability of rates would plague the shipping and consuming public." The Interstate Commerce Commission was set up in the beginning, the witness reminded the committee, to meet just such a chaotic situation.

Cooperation in Service.—Mr. Franklin and Mr. Johnson both presented to the committee specific instances of practical situations arising in making or changing rates which revealed the wide ramifications of apparently simple changes and the great number of carriers and communities affected by them. In addition to discussing rate-making procedures in this fashion, Mr. Johnson outlined to the committee also some of the situations in which railroads find it necessary, as a practical matter, to confer with each other on matters of service. Only by such cooperation and joint action, he asserted, is it possible to move a carload of freight fro mone point to any other point in North America.

"The standardization of equipment, its interchange, the correlation of schedules, the inspection and delivery of freight, the collection of a single charge at destination, are all matters which have been worked out by conference and agreement and represent the highest practical degree of cooperation," he declared. "No one who will make an effort to visualize the movement of traffic from one coast to another, routed at the option of the shipper, and as the shipper insists, over a vast array of routes, and moving, however routed, over many different roads on fast and dependable schedules, through scores of busy terminals, would suggest that that result could be achieved without the highest degree of earnest consultation and cooperation between all the interested lines."

In outlining to the committee the processes and advantages of the conference method of making rates, Mr. Johnson made the point that "the dominant characteristic of the so-called conference method of rate determination is the opportunity which it affords to every interested shipper and every interested railroad to have his say, to express his views with reference to every proposed rate change, with the result that before any railroad acts on a rate proposal it knows the views and the position of every interested party."

Ordered to Confer.—The recent report and order of the commission in the so-called uniform class rate and classification proceedings, Mr. Tilford pointed out to the committee, leave the railroads no alternative but to confer in order to make the changes in rates and arrive at the nation-wide classification which it has prescribed. "How can a uniform freight classification and uniform rates be compiled unless there is a joint conference of the representatives of all the railroads involved?" he asked. "Obviously, they must hold conferences, first to comply with the decisions of the commission and convert its findings into usable rate schedules, and second, to avoid taking some action which would disrupt the uniformity required of them."

As evidence of the thoroughness of the rate investigations the commission makes, of the concerted action it requires of carriers to make its orders in rate cases effective, and of the complexity of the transportation business and the country's rate structure, the L. & N. vice-president submitted along with his testimony a group of documentary exhibits which reduced many of the ramifications of the subject from the realm of general principles to that of specific and actual applications. In the face of such a situation, his testimony indicated, the public must be protected by a procedure in which, although rates are at all times subject to complaint, differing requirements and limitations can be brought out and reconciled, as far as possible, before rate changes are made. Utter confusion in transportation and charges would result from the abrogation of the rate conference procedure, he advised the committee.

Anti-Trust Suit Names General Electric and Westinghouse

United States Attorney General Tom C. Clark on October 9 announced the filing, in the federal district court in New York, of a civil action charging the General Electric Company, the Westinghouse Electric Corporation, two subsidiaries, and an association (Electrical Apparatus Export Association) jointly controlled by them, with violations of the Sherman Anti-trust Act in the sale of electrical equipment for export. Charging price fixing and allocation of sales, the complaint asks for a permanent injunction from "numerous" alleged violations of the Sherman act, for a prohibition against future contracts which have the effect of restricting exports of electrical equipment and fixing prices on export sales, and for a finding that contracts between the parties and certain foreign companies are "illegal."

Revamp Bill Exempts N. M. B. and Retirement Board

Additional exemption provisions covering the National Mediation Board, National Railroad Adjustment Board, and Railroad Retirement Board were inserted by the House as it passed the government agency reorganization bill on October 4. The bill, H. R. 4129, sponsored by Representative Manasco, Democrat of Alabama, is a partial response to President Truman's recent request for authority to reorganize federal agencies.

As noted in the *Railway Age* of September 29, page 534, the bill was reported from the House committee on expenditures in the executive departments with only three agencies exempt, among them the Interstate Commerce Commission. The additional exemptions for N. M. B., N. R. A. B. and R. B. B. were inserted by an amendment offered when the bill was before the House by Representative Crosser, Democrat of Ohio. The amendment, adopted by a division vote of 170 to 44, reads as follows:

> No reorganization plan shall affect any provision of the Railroad Retirement Acts, as amended, or of subchapter B of chapter 9 of the Internal Revenue Code, as amended, or of the Railroad Unemployment Insurance Act, as amended, or of the Railway Labor Act, as amended; nor shall any such plan affect any agency functioning pursuant to or any function being performed pursuant to any of such acts except functions of the Bureau of Internal Revenue not related to subchapter B of Chapter 9 of the Internal Revenue Code.

1945 "Railway Accounting Rules" Available

"Railway Accounting Rules," effective October 1, 1945, has been issued by the Accounting Division of the Association of American Railroads. It contains all mandatory and recommendatory accounting rules and standard forms, amended or supplemented in accordance with the approved recommendations of the standing committees of the Accounting Division, as embodied in their respective reports for the fiscal year ended June 30, 1945. With the exception of new Mandatory Passenger Rule 109, effective with traffic originating on and after June 1, 1945, all amendments or additions to the rules and forms included are effective as of October 1, 1945.

One copy will be furnished without charge to each member of the Accounting Division, and additional copies may be obtained from the Division's office, Transportation Building, Washington 6, D. C., the prices to member roads and their employees being 50 cents per copy when ordered in quantities of ten or more; and 75 cents when ordered in quantities of less than ten. Prices to non-members are double the foregoing.

Successor to War Production Board Is Set Up

The existence of the War Production Board will be terminated November 3 under the provisions of Executive Order No. 9638, issued at the White House last week. Its remaining functions, powers and personnel will be transferred at that time to a new agency, the Civilian Production Administration, the principal duty of which will be, according to John D. Small, newly named administrator, "a swift orderly transition from war-time production to a maximum peace-time production in industry free from government controls with due regard for the stability of prices and costs."

The resignation of J. A. Krug, chairman of the W. P. B., has been accepted by President Truman, to become effective on the day of the board's dissolution. Mr. Small, who has been chief of staff of the W. P. B., becomes in effect Mr. Krug's successor, although it is expected that the new office will have a much smaller and more compact organization than its war-time predecessor.

The C. P. A. will have five main bureaus, according to Mr. Small, which will function as follows:

Industrial Reconversion Operations: To deal with issues affecting particular industries which produce or consume certain materials that are still scarce, such as rubber, forest products, tin, lead and some

other minerals, a few construction materials, certain textile and chemical items, and miscellaneous hard goods and equipment.

Reconversion Priorities: To be responsible for the modification of such general priorities and allocation controls as are still in effect (as distinct from matters peculiar to individual industries), and for intra-agency routine, compliance, and relationships with other government agencies.

Field Operations: To oversee compliance and other matters handled through field offices.

International Supply: To facilitate imports and exports and international allocations.

Demobilization: To close out the agency's operations or handle their transfer to other government organizations.

In discussing the functions of the new office, Mr. Small pointed out that the W. P. B. Compliance Division had been instructed to continue its expanded investigations and other activities to prevent possible violators of regulations, or of the spirit of the reconversion program, from getting an unfair advantage over the "vast majority of business concerns which have always tried to comply with our orders."

The C. P. A., according to the administrator, will use its authorized powers to expand the production of materials which are in short supply; limit the use of materials which are still scarce; restrict the accumulation of inventories so as to avoid speculation, hoarding and unbalanced distribution; grant priorities if necessary to break "bottle-necks" impeding smooth reconversion; facilitate the fulfillment of relief and other export programs; and allocate scarce materials or facilities to support production of low price items contributing to the success of the administration's stabilization program. The agency's goal, he said, is " to reach full employment and full production and do it under a system of free enterprise."

Straight Pay 26.9% Higher than in 1940

(*Continued from page 616*)

ply inventories substantially in excess of what the commission has found to be properly includable as working capital, the rate of return has been calculated for the 12 months ended with June, 1945, on a "net property investment base," as arrived at by adjusting book property investment for accrued depreciation and amortization and for materials and supplies, and on a "value of property base," arrived at by adjusting the I. C. C. valuations for changes in investment, supply inventories, and accrued depreciation and amortization. The rate of return for all Class I roads calculated by the bureau was 4.86 on the property investment basis and 5.59 on the valuation basis. By districts, the rate on the property investment basis was 4.41 for the Eastern (including Pocahontas); 5.58 for the Southern; and 5.11 for the Western. On the valuation basis it was 4.93 for the Western; 6.33 for the Southern; and 6.09 for the Western.

The regular monthly review of railroad operating results showed that the freight revenue of the Class I roads in August, on a daily basis, was 10.1 per cent lower than for July and 11.3 per cent under August, 1944. The freight revenue index (based on the 1935-1939 monthly average as 100) was 204.0, the lowest since January, 1943. For July this figure was 226.9; for June it was 235.2. The low reached in August, 1945, the bureau pointed out, was due primarily to the V-J Day holidays, but, it added, "a downward trend seems likely as a result of the termination of the war."

August passenger revenue on a daily basis was 1.7 per cent more than July, but 5.4 per cent less than August, 1944. The passenger revenue index at 437.6 compared to 430.4 for July, 449.0 for June, 462.7 for August, 1944, and 462.4 for August, 1943.

Rail and Air Mail Revenues—A review of revenues derived by Class I line haul roads from mail and express in recent years showed an increase in mail revenue, in 1944 over 1939, of 31.54 per cent, and an increase in express revenue, in the same years, of 160.65 per cent. Over the same period, however, the bureau's comment added, domestic air lines experienced an increase of 80.25 per cent in mail revenues and of 407.45 per cent in express and freight revenues. Where air mail revenue was 18.7 per cent of rail mail revenue in 1939, it was 25.6 per cent in 1944; where air express-freight revenue was 2.9 per cent of rail express revenue in 1939, it was 5.7 per cent in 1944.

Further revisions in the bureau's forecast of carloadings led to a predicted total, for the last half of this year, of 17,628,344 revenue cars, a 9.2 per cent decline from actual loadings in the last half of 1944. The estimate published a month earlier put the total at 17,819,866 cars, a decrease of 8.2 per cent under last year. The current comment predicted loadings for the first quarter of 1946 about 14 per cent below this year's actual figures. Whereas October carloadings normally are at the year's peak, the bureau's prediction for this year, for the four weeks ended October 27, was 804,900 cars weekly, a decrease of 10.5 per cent under average weekly loadings last October, and a decrease of 2.2 per cent below the September, 1945, level, which in turn was a decrease of 7.7 per cent under the corresponding period in 1944.

Revised month by month comparisons of the bureau's forecasts with actual loadings in the previous year, for carload freight only, showed the following expected percentage decreases (all larger than the decreases predicted in September): October, 11.5; November, 12.1; December, 11.1; January, 12.3; February, 14.5; and March, 14.7.

Hold Up Express Strike for New Board to Investigate

Acting under the provisions of section 10 of the Railway Labor Act, President Truman on October 5 appointed a 3-member emergency board to investigate a dispute between the Railway Express Agency and the International Brotherhood of Teamsters, Chauffeurs, Warehousemen and Helpers of America, the designated representative of certain drivers in its employ, arising from demands submitted by the union for higher wages and changes in working conditions.

A strike to be effective in several large cities had been called for October 8, but this was called off so the new board can consider the issues. This strike was called after the recommendations of a National Railway Labor Panel emergency board (reported in *Railway Age* of September 1, page 383) failed to include approval of immediate wage increases.

Can Speed Amortization of War Facilities

Railroads like other industries will become eligible for income tax refunds as a result of the expedited amortization of war facilities which has been authorized by President Truman's recent proclamation ending the emergency period defined in section 124 of the Internal Revenue Code. While there are other options, railroads which have been in the excess profits tax brackets may be expected to adopt the expedited amortization plan.

Section 124 of the Internal Revenue Code is that section which provided that facilities certified as necessary for the national defense could be amortized over a period of 60 months. The President's proclamation has the effect of issuing a blanket certificate of non-necessity.

Thus companies with certified facilities not fully amortized may now elect to terminate the amortization, recompute it on the basis of the shorter term, and apply for tax refunds for the prior years involved. Other options permit continuance of the amortization through the 60 months period, or termination of the amortization and depreciation of the unamortized balance under normal depreciation arrangements. The election must be made within 90 days after the date of the President's proclamation, which was dated September 29.

As indicated above, the railroads may be expected to elect the expedited amortization and tax refund option, especially those which have been subject to excess profits taxes in the years 1943, 1944, or 1945. Up to the end of July, the railroads had obtained certificates authorizing the 60-months amortization of facilities and equipment costing approximately $679,000,000, and it has been estimated that the unamortized balance is about $500,000,000.

Commissioners Differ on Truck Control by Forwarder Owner

The decision of a majority of Division 4 of the Interstate Commerce Commission, made up of Commissioners Porter and Mahaffie, to approve the acquisition of control of two motor carriers by an individual who controls a freight forwarder has led Commissioner Miller to register his dissent on jurisdictional grounds, it being his contention that such a transaction is prohibited by section 411 (a) (1) of the Interstate Commerce Act, even though section 411 (g) does authorize the commission to allow a motor carrier to acquire control of a forwarder.

The majority report and the accompanying order in MC-F-2632 and related proceedings dispose of the application of Central Motor Freight Company for authority to purchase certain operating rights of

Michicago Motor Express, and of Wilbur C. Bacon for authority to acquire control of Central and another truck operator, Milwaukee Truck Service, through ownership of stock. The effect of Central's acquisition from Michicago will be to extend the scope of its Chicago-Kalamazoo, Mich., operations to Battle Creek, and there was no difference of opinion in the division, so far as the report indicated, as to this phase of the application, which was approved, subject to certain conditions.

On or about June 1, 1944, the report explained, Bacon acquired control of a majority of the stock of Central, of Truck Service, and of Central Forwarding Company. The latter operates as a common carrier by truck within Illinois and as a freight forwarder in numerous states. The present proceeding did not involve Bacon's acquisition of Forwarding, but the division said this "will receive our separate consideration," as Bacon thus came into control of another carrier through stock ownership, without commission authority under section 5. He had exercised actual (as distinguished from stock) control of the three companies since 1941, "and presumably that type of control was lawfully acquired," the majority observed.

Since the enactment (May 16, 1942) of part IV of the act, it has been unlawful, under section 411 (a) (1), for a forwarder, or a person controlling a forwarder, to acquire control of a motor carrier, except as section 5 authorizes a carrier to acquire control of another carrier. "No means is provided in part IV whereby the commission may approve acquisition by such a person of control of a motor carrier," the majority noted, and so it held that Bacon, who controlled a freight forwarder but who was not himself a carrier, violated section 411 (a) (1) and section 5 (4) when, on June 1, 1944, he acquired control of Central and Truck Service.

The majority then turned to the provisions of section 411 (g), which permits a person controlling a motor carrier to acquire control of a forwarder, and pointed out that the result would be the same as if 411 (a) (1) were violated, that is, that the trucker and the forwarder would be under common control after consummation of the transaction. It then referred to the exception to section 411 (a) (1), which provides that the right of a carrier subject to part I, II or III to acquire control of any other carrier subject to the same three parts, in accordance with the provisions of section 5, shall not be affected by the subsection's restriction.

While this exception is limited to acquisitions of control by carriers, the majority held, it "evidences an intent to leave unchanged our powers to approve transactions subject to section 5. The instant transaction would be clearly subject to that section except for the doubt arising because of the control of Forwarding by Bacon and the prohibition in section 411 (a) (1)." This "doubt" the majority resolved by finding that the commission's jurisdiction under section 5 "was not intended to be affected by enactment of part IV of the act," whence it found acquisition of stock control of Central and Truck Service by Bacon to be in the public interest and within the scope of section 5 (2) (a), and so authorized it.

While Commissioner Miller acknowledged that the authority granted in section 411 (g) for a carrier to acquire control of a forwarder is "inconsistent" with the result of the section 411 (a) (1)'s prohibition of acquisition of control of a carrier by a forwarder, or a person controlling a forwarder, he insisted, nevertheless, that 411 (g) does not give the commission jurisdiction, under section 5, to do what 411 (a) (1) prohibits. As Bacon was not and is not a carrier, he said, the control authority sought is not within the exception to the prohibition in 411 (a) (1), and the commission, under the present law, is without jurisdiction to grant such authority.

Fined for Elkins Act Violation

The Interstate Commerce Commission has been advised that the Detroit, Toledo & Ironton on October 1 pleaded guilty to six counts of a 25-count information filed against it in the federal court at Detroit, and that the court imposed a fine of $1,250 on each, or a total of $7,500.

According to a notice issued by Secretary W. P. Bartel, the information charged the road with willful failure strictly to observe its tariffs and with granting concessions, both being violations of section 1 of the Elkins Act. The transactions involved carload shipments of iron and steel plates upon which, it was alleged, the carrier assessed a freight rate lower than was lawfully applicable. The case was investigated by the commission's Bureau of Inquiry.

Valuation Bureau Publishes Construction Guide Prices

The engineering section of the Bureau of Valuation of the Interstate Commerce Commission has made public a compilation entitled "Railroad Construction Guide Prices," in which are set forth average unit prices for construction operations and supplies arranged by primary accounts as designated in the commission's accounting classification of Investment in Road and Equipment, and in some accounts separately by regions.

The data in the 60-page publication are average prices to be used only in connection with volume production, and are not necessarily applicable for use on individual properties, the bureau warned. They have been developed for its work in bringing valuations to date and for special investigations, and "have not been examined or passed on" by the commission.

The prices shown generally cover the 1910-1914 price level used in the commission's basic valuation work and, in addition, the unit prices for the individual years 1928-1944, inclusive. Prices shown for accounts which include such items as grading, tunnel excavation, bridges, ballast haul, and tracklaying and surfacing were developed from analyses of major construction contracts covering a period of over 30 years, and from joint studies made with subcommittees of the Presidents' Conference Committee, the bureau explained. The prices shown for material accounts, such as ties, rails, track material, ballast and fences were based on studies of carriers' valuation returns, work done with Presidents' Conference subcommittees, trade publication data, contracts covering major construction projects, and information obtained from individual railroads.

The bureau pointed out that the tabulation is, in its present form, far from complete, but amplified versions are expected to be developed later. For some items data were lacking for certain years, but it is expected that this lack can be remedied in future issues of the guide.

Land Grant Repealer Approved by Senate

(*Continued from page 610*)

benefits of repeal to any road which failed to reconvey to the government any granted lands still held by railroads and not actually in use for right-of-way.

The filibuster which Senator Bilbo had threatened to carry on for 30 days ended after the "gentleman from Mississippi" had held the floor only two days. He was sponsor of an amendment which would have delayed the effective date of repeal until 18 months after the enactment date, but he readily agreed to go along on the compromise (suggested by Senator Johnston of South Carolina) which made October 1, 1946, the effective date. Before this date was agreed upon, sponsors of the veterans' farms fund provision had intended to include in that amendment a July 1, 1946, effective date.

As passed by the House the bill would have made repeal effective 90 days after the enactment date. In its favorable report to the Senate, that body's committee on interstate commerce proposed an effective date 90 days after the cessation of hostilities in the war with Japan, as proclaimed by the President or declared by concurrent resolution of the two houses of Congress, whichever is earlier.

No Record Vote—Senate approval of the bill came without a record vote, although a few senators arose to state that if there had been a roll call they would have voted in the negative. They were Senators Shipstead, of Minnesota, Republican, Byrd of Virginia, Russell of Georgia, and Hill of Alabama, Democrats. Aside from Senator Bilbo's filibustering, the principal Senate speeches on the bill were the explanatory statement of Senator Wheeler and remarks by Senator Reed. Senator Wheeler's statement was interrupted frequently by questions and comment, coming mainly from Senator Bailey, Democrat of North Carolina.

Summarizing his own attitude, Senator Wheeler recalled that he had opposed previous repealers and that he had objected particularly to repeal while the war continued. He added: "I am not married to this measure or to any other, but, against the repeated resolutions of every traffic organization, of every shipping organization that has ever taken it up, of the railroad and public utilities commissions in every state, and of the recommendations of the Interstate Commerce Commission, I cannot stand in the Senate, set my judgment against theirs, and say that the law should not be repealed in the interest of giving fair rates to the shippers of the United States. . . . I am not going to put up my judgment against that of the experts."

During the course of his filibustering

speech Senator Bilbo called this "conversion" of Senator Wheeler "greater than that of the Apostle Paul on the way to Damascus." Also, the Mississippian from time to time called the railroads a "bunch of welchers," although he claimed that he was not an enemy of the carriers. In fact, he said, he used to "run on the railroads" himself—he was a "news butch" on the Nashville, Chattanooga & St. Louis and Louisville & Nashville.

Equipment and Supplies

LOCOMOTIVES

The Union Pacific will receive from Fairbanks, Morse & Co., on November 1 a three-unit, 6,000-hp. Diesel-electric locomotive, which has been designed for a maximum operation of 65 m.p.h. This locomotive will be tested on a run from south of Salt Lake City, Utah, to Los Angeles, Cal., in freight hauling and possibly in passenger service. The Union Pacific will also receive a four-unit, 6,000-hp. Diesel-electric locomotive from the Electro-Motive division of the General Motors Corporation, which is to be tested between Green River, Wyo., and Ogden, Utah, under exact loads and conditions to determine comparison of performance of this unit with the Union Pacific's "Big Boys," or 4000 class, 4-8-8-4 type, locomotives. Later tests of the new locomotive will also be conducted between Salt Lake City and Los Angeles.

FREIGHT CARS

The Elgin, Joliet & Eastern is inquiring for 300 50-ton gondola cars, 200 50-ton flat cars and 50 50-ton hopper cars.

IRON AND STEEL

The Central Railroad of New Jersey has ordered 6,000 gross tons of 131-lb. rail from the Bethlehem Steel Company.

The Southern Pacific is reported to have ordered 138,000 tons of 113 to 132 lb. rail from the Colorado Fuel & Iron Co. and the Columbia Steel Company.

The New York Central has ordered 108,000 tons of rails and angle bars for 1946 delivery. The order was reported to have been placed with the Carnegie-Illinois Steel Corporation, the Bethlehem Steel Company, the Inland Steel Company and the Algoma Steel Company.

The Southern Pacific has placed orders with the Colorado Fuel & Iron Corp., and the Columbia Steel Company for a combined order of 138,000 tons of 113-lb. to 132-lb. rail. The railroad plans to replace worn rail and track fittings over a distance of 725 miles.

Supply Trade

The **Bettendorf Company**, Bettendorf, Iowa, has received the Army-Navy "E" award for outstanding production achievement.

Charles Ringel, formerly with the American Locomotive Company, has joined the engineering department of the **American Arch Company.**

R. N. Landreth, special representative of the **Allis-Chalmers Manufacturing Company,** with headquarters at Washington, D. C., has been promoted to assistant to the vice-president. He will continue to reside in Washington but will function on assignments from Milwaukee, Wis.

Colonel Frederick C. Horner, formerly assistant to the chairman of the **General Motors Corporation** on transportation matters, who is now on inactive status in the U. S. Army, is returning to the corporation as director of the field operations sections of the distribution staff, with headquarters in Detroit, Mich.

Harold P. Litchfield, commercial sales manager, has been appointed assistant general sales manager of the **Graybar Electric Company.** He will supervise all sales contacts with the General Electric Company, including its lamp division, and have charge of Graybar sales in lighting, lamps, power apparatus, marine and signaling. **E. F. Murphy** will take over Mr. Litchfield's duties on national accounts in addition to his present activities as eastern commercial sales manager.

Eleven of the 12 buildings erected by the government on land leased from the **American Locomotive Company** at the Schenectady, N. Y. plant in 1942 have been purchased by the company and now are devoted to peacetime production. These buildings include four major and seven auxiliary structures. All were used for the production of war materials, including tanks and tank destroyers. The largest of the buildings purchased is the gun tube shop covering an area of 109,000 sq. ft. Others include combat tank assembly and mobile howitzer assembly shops and the government warehouse, now a Diesel parts warehouse. Some of the buildings now will be devoted to the development of a new line of Diesel locomotives soon to make its appearance.

OBITUARY

Albert Lincoln Salt, retired president and chairman of the board of the Graybar Electric Company, died September 29. He was 80 years of age.

Abandonments

Pacific Electric.—This company has applied to the Interstate Commerce Commission for authority to abandon its line from Baldwin Park, Calif., to Lone Hill, 7.6 miles, since arrangements are being made to operate between those points over a parallel line of the Southern Pacific.

Reading.—This company has been authorized by Division 4 of the Interstate Commerce Commission to abandon a portion of a branch from Lofty Junction, Pa., to McAdoo, 3.48 miles.

Financial

Buffalo Creek.—*Bonds.*—This company and the Erie and Lehigh Valley, which control it through ownership of stock, have applied to the Interstate Commerce Commission for authority to issue, and to guarantee, respectively, $2,850,000 of series B first mortgage bonds due in 1995, the proceeds of which, with other funds, are to be used to retire at 105 the entire outstanding indebtedness of the Buffalo Creek, consisting of $2,881,000 of series A first mortgage bonds.

Chicago, Burlington & Quincy.—*Awards Promissory Notes.*—This road has sold to the First National Bank of Chicago a $2,836,800 issue of promissory notes, representing 80 per cent of the cost of ten new Diesel-electric passenger locomotives. The issue was awarded on the basis of competitive bidding, First National's successful bid making the interest cost 1.59 per cent over the issue's 10-year-term beginning November 1.

Chicago, Rock Island & Pacific.—*Payments to Security Holders and Creditors.*—In accordance with a recent federal court order, the Chicago, Rock Island & Pacific has announced that, beginning October 17, it will make cash payments totaling $34,279,750 to security holders and general creditors of the road. The disbursing agents will be the Continental Illinois National Bank & Trust Co., Chicago, and the Guarantee Trust Company of New York.

Gulf, Mobile & Ohio.—*Trackage Rights.*—This company has applied to the Interstate Commerce Commission for approval of an arrangement for its operation under trackage rights over a 3927-foot line of the East St. Louis Connecting in East St. Louis, Ill., which is operated under lease by the Terminal Railroad Association of St. Louis. This operation will provide a physical connection between the line now owned by the G. M. & O. and the line of the Alton, which it has been authorized by the commission to acquire through the latter's reorganization, subject to court approval.

Southern Pacific.—*Extension of Bond Maturities.*—The Central Pacific has applied to the Interstate Commerce Commission for authority to extend to 1974 the date of maturity of three issues of bonds of companies in the Southern Pacific system, all of which are owned by the Southern Pacific Company, which has agreed to the extension. The securities involved, which are guaranteed by the Central Pacific, are $3,000,000 of Central California first mortgage 6 per cent bonds due in 1941; $949,000 of Chicago & Northern 4 per cent first mortgage gold bonds due in

1940; and $2,500,000 of Sacramento Southern first mortgage 6 per cent bonds due in 1941.

MISSOURI-KANSAS-TEXAS. — *Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority to assume liability for $910,000 of equipment trust certificates in connection with its purchase of 200 automobile box cars fitted with loaders and 50 covered hopper cars. The total cost of this equipment is $1,188,297. The certificates are to mature in installments of $65,000 semi-annually.

NEZPERCE.—*Acquisition.*—This new company has applied to the Interstate Commerce Commission for authority to acquire the properties of the Nezperce & Idaho, which has been authorized by Division 4 of the commission to abandon its entire line from Craigmont, Ida., to Nezperce, 13.8 miles, subject to sale at salvage value to a purchaser who would undertake to continue its operation. The new company proposes to purchase the line for $26,500 cash.

TERMINAL OF ST. LOUIS.—*Awards Bonds.*—On October 11, the Terminal Railroad Corporation of St. Louis awarded $40,312,000 of 2¾ per cent refunding and improvement mortgage bonds due 1985 to the First Boston Corporation & Associates at 101.829, a net cost to the issuer of 2.799 per cent. (Previous item in *Railway Age* of October 6, page 581.)

UNION PACIFIC.—*Bonds.*—Division 4 of the Interstate Commerce Commission has authorized this company to issue $81,602,000 of series B 3 per cent refunding mortgage bonds, due in 1990, sold at 103.3599 to Halsey, Stuart & Company and others. The proceeds are to be used in connection with the redemption at 106 of a like principal amount of series A 3½ per cent refunding mortgage bonds due in 1980. (Previous item in *Railway Age* of September 8, page 426.) Estimated net savings from the refunding are estimated at $11,306,562. Between January 1, 1926, and August 15, 1945, this system, the division's report noted, has effected a net reduction in funded debt, including equipment obligations of $48,421,020, or 11.56 per cent, and a reduction in annual interest charges of $48,832,624, or 26.82 per cent. Meanwhile, its investment in road and equipment has increased $182,563,327, or 21.78 per cent.

Average Prices Stocks and Bonds

	Oct. 9	Last week	Last year
Average price of 20 representative railway stocks..	59.70	58.70	41.79
Average price of 20 representative railway bonds..	98.47	98.10	89.83

Dividends Declared

Chicago & North Western.—Common, irregular, $3.00; 5% preferred series A vtc (irreg.), both payable December 22 to holders of record December 1.

Elmira & Williamsport.—$1.14, semi-annually, payable November 1 to holders of record October 20.

Northern (New Hampshire).—$1.50, quarterly, payable October 31 to holders of record October 11.

Philadelphia & Trenton.—$2.50, quarterly, payable October 10 to holders of record October 1.

Wheeling & Lake Erie.—5½% convertible preferred, $1.37½; 4% prior lien, $1.00, both quarterly and both payable November 1 to holders of record October 19.

Railway Officers

EXECUTIVE

The Department of the Interior has announced the resignation of **Otto F. Ohlson** as general manager of the Alaska Railroad, and the appointment as his successor, effective January 1, 1946, of Colonel **John P. Johnson,** Army Transportation Corps.

Ernest S. Marsh, whose promotion to executive assistant to the president of the Atchison, Topeka & Santa Fe, with headquarters at Chicago, was reported in the *Railway Age* of October 6, was born in Lynchburg, Va., on January 10, 1903, and entered railway service on April 1, 1918, as a file clerk of the Santa Fe at Clovis, N. M. He advanced through the positions of assistant timekeeper, head timekeeper, assistant division accountant and division accountant at Clovis, and on May 12, 1932, was made head clerk in the division ac-



Ernest S. Marsh

counts bureau at Amarillo, Tex. Five years later he was promoted to general clerk in the auditor of disbursement's office at Topeka, Kan., where on January 1, 1940, he was made chief clerk and on July 1, 1940, was promoted to auditor of disbursements. On September 1, 1942, he was made chief clerk in the president's office and, on July 15, 1944, he was promoted to assistant to the president, the position he held at the time of his new appointment.

Armstrong Chinn, general manager of the Alton at Chicago, has been promoted to chief executive officer, with the same headquarters, succeeding **H. B. Voorhees,** who has resigned. Mr. Voorhees will now devote his entire time to his duties in the positions of vice-president of the Baltimore & Ohio and the Baltimore & Ohio Chicago Terminal Company.

Nelson W. Willard, whose retirement as executive assistant to the president of the Atchison, Topeka & Santa Fe was reported in the *Railway Age* of October 6, was born in Illinois and graduated from Knox College, after which he was a post graduate student at Harvard and Columbia universities. He began his career as an athletic director and professor of Greek at Knox College and in 1905 became a traveling auditor for the Santa Fe. He was made a clerk in the president's office in 1906 and after serving in various capacities was made chief clerk to the president in 1910. Dur-



Nelson W. Willard

ing federal control of the railroads, Mr. Willard served for a period as assistant to the federal manager of the Santa Fe and later was promoted to assistant to the president. In September, 1942, he was advanced to the postion he held at the time of his retirement.

FINANCIAL, LEGAL AND ACCOUNTING

William D. Steele, whose appointment as treasurer and assistant secretary of the Wabash and the Ann Arbor with headquarters at New York was announced in the *Railway Age* of October 6, was born in Creston, Iowa, on October 6, 1895. He entered the service of the Chicago, Burlington & Quincy in the division superintendent's office at Creston in May, 1915, and transferred to the general offices at



Shelburne Studios

William D. Steele

Chicago in 1917 as secretary to the superintendent of the relief, surgical, and employment department. After serving in the United States Army from September, 1917, to September, 1919, he became secretary to transportation assistant, regional direc-

tor's office, of the United States Railroad Administration at Chicago. From 1920 until 1926, he served as secretary to receiver and assistant chief clerk to president of the Denver & Rio Grande and the Denver & Rio Grande Western at Denver, Colo. Mr. Steele was statistician and chief clerk to chairman of the board of the Missouri Pacific at New York from 1926 to 1930, when he was elected director, assistant secretary, and assistant treasurer of the Wabash. His recent advancement occurred October 1.

W. E. Whittington, assistant real estate agent of the Baltimore & Ohio at Baltimore, Md., has retired.

J. N. Dillen will become secretary of the Wheeling & Lake Erie with headquarters at Cleveland, O., effective October 16, 1945.

Walter F. Crueger, whose advancement to tax and insurance agent of the Norfolk & Western at Roanoke, Va., was reported in the *Railway Age* of September 15, was born on October 22, 1895, in Roanoke, Va., and entered railroading in the service of the N. & W. in 1913, as a messenger in the accounting department. In 1915 he was promoted to clerk, and subsequently



Walter F. Crueger

served as clerk in charge of construction accounts from 1922 until his promotion to comptroller's agent in 1933. Mr. Crueger became chief clerk to comptroller in 1938, which position he held until his recent appointment as tax and insurance agent.

P. Olfelt, chief clerk in the office of the freight claim agent of the Minneapolis, St. Paul & Sault Ste. Marie at Minneapolis, has been promoted to assistant freight claim agent, with the same headquarters.

Elena J. Camp, assistant to secretary of the New York, New Haven & Hartford, and **Edward F. Donovan,** transfer clerk, both at New Haven, Conn., have been appointed agents of the trustees with the titles of assistant secretaries, and headquarters unchanged.

Benjamin F. Fence, whose retirement from the post of tax and insurance agent of the Norfolk & Western at Roanoke, Va., was announced in the September 15 issue of *Railway Age,* was born on August 19, 1874, at Quicksburgh, Va. Mr. Pence entered railroad service with the N. & W. in 1900, as a stenographer. In 1910, he became a clerk, and in 1920, tax and insurance agent, the position from which he recently retired.

OPERATING

Howard Ginter, whose promotion to assistant to the general manager, western region, of the Pennsylvania, with headquarters at Chicago, was reported in the *Railway Age* of October 6, was born at Johnstown, Pa., and entered the employ of the Pennsylvania in April, 1909, at Conemaugh, Pa., as track supervisor's clerk in the maintenance of way department. He remained in this position until July, 1918, when he was appointed a clerk to the superintendent at Pittsburgh, Pa. Later he was appointed



Howard Ginter

chief clerk to the master mechanic, following which he was transferred to the general superintendent's office at Cleveland, Ohio, where he was made assistant chief clerk. After three years in this position, he became chief clerk, in 1923. Five years later he was transferred to Pittsburgh, where he was chief clerk to the vice-president. On December 1, 1929, he was promoted to superintendent of passenger transportation at Chicago, the position he held at the time of his new appointment.

P. H. Googe has been appointed assistant superintendent of transportation of the Savannah & Atlanta with headquarters at Savannah, Ga.

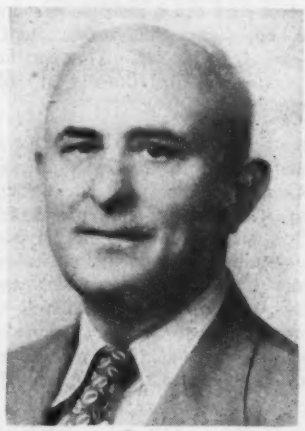
J. H. Doggrell, special representative of the general manager of the St. Louis-San Francisco, with headquarters at Springfield, Mo., has retired on account of illness.

F. T. Mahoney has been appointed trainmaster-agent of the Missouri Pacific, with headquarters at Omaha, Neb., succeeding **H. F. Kaho,** who has retired after 35 years of service.

James Nagel, assistant general superintendent of the Montour at Coraopolis, Pa., has been appointed general superintendent at the same headquarters, succeeding **W. H. Hamilton,** whose promotion to vice-president—engineering was announced in the *Railway Age* of September 29.

TRAFFIC

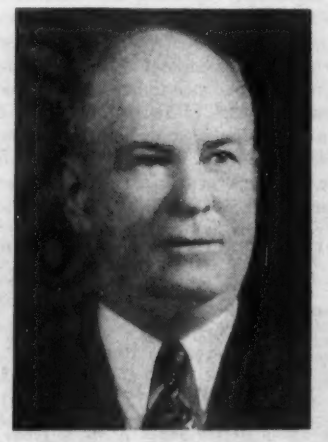
Mark W. Thomas, whose appointment as assistant freight traffic manager of the Central of Georgia at Savannah, Ga., was announced in the September 22 issue of *Railway Age,* entered the service of the Central of Georgia in 1910 at Atlanta, Ga., as chief clerk to the division freight agent.



Mark W. Thomas

He was advanced to soliciting agent there that year, and became rate clerk at Savannah in 1912. He has since remained there, except for a period of two years with the Pennsylvania at Atlanta. Mr. Thomas was appointed assistant general freight agent in 1930 and general freight agent in 1941. His advancement to assistant freight traffic manager became effective September 1.

William E. Stewart, whose promotion to general freight traffic manager of the Central of Georgia at Savannah, Ga., was announced in the *Railway Age* of September 22, was born August 10, 1883, in Madison, Ga., and entered railroading in 1902 as a seal clerk in the service of the Central of Georgia. In 1905, he transferred to the office of the commercial agent for the same



William E. Stewart

line, and was promoted to soliciting agent in 1906. From 1907 to 1909 he was solicitation clerk in the freight traffic department at Savannah, going from there to the post of commercial agent at Chattanooga, Tenn. In 1917, Mr. Stewart became division freight and passenger agent there, and dur-

ing wartime operation of the railroads he was chief clerk of the Southern Export Committee, United States Railroad Administration at Atlanta, Ga. He returned to his former position in March, 1920, and was elevated in August, 1920, to assistant general freight agent at Macon, Ga. In January, 1937, he was promoted to general freight agent at Savannah. His appointment as freight traffic manager came in September, 1941, and he remained in that position until his recent promotion to general freight traffic manager.

R. C. Dutruch, traveling service agent of the Illinois Central at Dallas, Tex., has been promoted to district passenger agent, with the same headquarters.

Charles D. Chancellor, whose appointment as freight traffic manager of the Central of Georgia at Savannah, Ga., was announced in the September 22 issue of *Railway Age,* was born on December 11, 1883, in Okolona, Miss. Mr. Chancellor entered railroad service in 1897 as a mail clerk with the Central of Georgia. After a promotion to rate clerk, he left to join



Charles D. Chancellor

the Seaboard Air Line, but returned shortly to his former position with the Central of Georgia. He was promoted to executive rate clerk in 1912, to chief rate clerk in 1913, and to assistant general freight agent in 1921. In 1930, he was advanced to general freight agent, and in 1941 to assistant freight traffic manager. Mr. Chancellor's promotion to freight traffic manager, headquarters Savannah, was announced on September 1, 1945.

Robert M. Martin, whose promotion to western freight traffic manager of the Central of Georgia, with headquarters at Chicago, was reported in the *Railway Age* of September 29, was born at Madison, Ga., on April 26, 1895. He entered railway service on February 12, 1913, as a messenger of the Central of Georgia at Macon, Ga., subsequently holding various other minor positions until April, 1918, when he entered the United States Army to serve in World War I. In December of the same year Mr. Martin returned to the Central of Georgia and was appointed an accounting clerk at Macon. A short time later he was promoted to claim clerk and in 1922 he was advanced to assistant chief clerk of the freight traffic department, with the same headquarters. On August 1, 1924, he was further advanced to chief clerk and one year later to freight service agent. On May 1, 1931, Mr. Martin was promoted to traveling freight agent, with the same headquar-



Robert M. Martin

ters, and on March 1, 1939, he became a commercial agent, with headquarters at Chicago. On July 1, 1942, he was advanced to northwestern traffic agent, with the same headquarters, the position he held at the time of his new appointment.

William L. Taylor, assistant to freight traffic manager of the Southern at Washington, D. C., has been promoted to assistant freight traffic manager with the same headquarters.

Allen W. Sanders, whose appointment as assistant freight traffic manager of the Central of Georgia at Savannah, Ga., was reported in the September 22 issue of *Railway Age,* entered the service of the Central of Georgia in 1902 in the general freight office at Savannah. Six years later he went with the Virginia Lines Tariff Bureau at Richmond, Va., but returned to the Central of Georgia as a tariff clerk after five



Allen W. Sanders

months. In 1911, Mr. Sanders went with the Carolina Clinchfield & Ohio (now Clinchfield) at Johnson City, Tenn., again returning to the Central of Georgia, in 1919, as rate clerk. His subsequent promotions have been rate adjustment clerk, executive rate clerk, assistant to general freight agent, assistant general freight agent and, in 1941, general freight agent. Mr. Sanders' appointment as assistant freight traffic manager became effective on September 1, 1945.

G. A. Scriven, traveling agent of the Minneapolis & St. Louis, with headquarters at Indianapolis, Ind., has been promoted to general agent and placed in charge of a newly-established traffic office at Great Falls, Mont.

Alexander H. Acker, district passenger agent of the Southern at Asheville, N. C., has retired after 50 years' service.

W. L. Huggins, Jr., formerly freight traffic manager of the St. Louis-San Francisco at Kansas City, Mo., who has been on leave of absence for the past three years to serve as a naval officer, has returned to the Frisco and has been appointed special representative of the chief traffic officer, with headquarters at Washington, D. C.

Clifford V. Harrow, whose appointment as general eastern freight agent of the Erie at New York was announced in the September 15 issue of *Railway Age,*



Clifford V. Harrow

was born at Fremont, Neb., on September 25, 1893. He entered railroading in 1918 as a stenographer for the Union Pacific. In 1920 he joined the Erie as a clerk-stenographer at Omaha, Neb., and was advanced in 1924 to commercial agent at Toledo, O., then to general agent at Des Moines, Iowa, in 1927, transferring to Omaha, Neb., in 1931, and to Minneapolis, Minn., in 1936. In January, 1941, he was elevated to division freight agent at Rochester, N. Y., where he remained until March, 1942, when he became assistant general freight agent at Chicago. His advancement to general eastern freight agent became effective on September 16.

L. E. Archer, traveling passenger representative of the Baltimore & Ohio, with headquarters at Minneapolis, Minn., but temporarily assigned to Chicago, has been promoted to northwestern passenger agent, with headquarters at Chicago, succeeding **H. C. Strohm,** who has retired.

Walter H. Browne has been appointed foreign freight traffic manager of the Delaware, Lackawanna & Western with head-

quarters at New York. He was promoted from the position of general foreign freight agent to which he was named early this year, as noted in the *Railway Age* of February 24, where his photograph and a sketch of his career appeared. **W. F. Ahearn** and **D. F. McGauley,** members of the traffic staff of the assistant general freight agent, have been appointed foreign freight agent, and export and import agent, respectively, with headquarters as before at New York.

ENGINEERING & SIGNALING

E. H. Bullock, assistant signal supervisor of the Union Pacific at Grand Island, Neb., has been promoted to assistant signal engineer, with headquarters at Omaha, Neb.

M. S. Rose, supervisor of maintenance of way of the Aliquippa & Southern, has been appointed engineer maintenance of way, with headquarters as before at Aliquippa, Pa., a change of title.

N. D. Bloom, division engineer of the Atchison, Topeka & Santa Fe at Las Vegas, N. M., has been transferred to the Pecos division, with headquarters at Clovis, N. M., succeeding **W. R. Baker,** who has been assigned to other duties.

H. G. Morgan, signal engineer of the Illinois Central at Chicago, whose recent appointment to succeed to part of the duties of **W. M. Vandersluis,** retired general superintendent of telegraph and signals, while retaining his present title, was reported in the *Railway Age* of October 6, was born in Huntington, Ind., in 1883. He was educated at Purdue University, receiving a degree in electrical engineering in 1904. His first technical experience was with the Bell Telephone Company, where he held a position as service inspector for three years. In 1907 he entered the service of the Illinois Central as a draftsman in the signal department, remaining until 1909 when he accepted an appointment as chief



H. G. Morgan

draftsman in the signal department of the Chicago & North Western. In 1910 he was appointed assistant engineer with the General Railway Signal Company at Rochester, N. Y., a position which he held until 1913. In that year he returned to the Illinois Central as office engineer in the signal department, where he served until 1914, when he was transferred to the valuation department as pilot signal engineer. In September, 1917, he was promoted to signal engineer to fill a vacancy left by Mr. Vandersluis, who had entered military service. Upon the return of Mr. Vandersluis from service Mr. Morgan resumed his duties as office engineer. In 1920 he was appointed to the position he has held since that time.

J. M. Trissal, whose promotion to superintendent of communication and electrical engineer of the Illinois Central, with headquarters at Chicago, was reported in the *Railway Age* of October 6, was born at Chicago on December 30, 1903. He attended high school in Chicago, and was graduated from the University of Illinois with a degree of Bachelor of Science, in 1925, receiving the professional degree of Electrical Engineer in 1940. Mr. Trissal entered railroad service as a draftsman in the signal department of the Illinois Central during the summer of 1924. Following his graduation, he returned to the Illinois Central signal department, and in 1926 was transferred to the electrical department of the Chicago Terminal Improvement and



J. M. Trissal

appointed junior engineer, later serving as assistant engineer. Following the completion of the electrification program in June, 1930, Mr. Trissal was appointed assistant electrical engineer of fixed property, reporting to W. M. Vandersluis, general superintendent of telegraph and signals. In November, 1931, Mr. Trissal was promoted to electrical engineer of fixed property, the position he held at the time of his new appointment.

John F. Swenson, division engineer of the Chicago Terminal division of the Pennsylvania at Chicago, who has been on leave of absence due to illness, has returned to the Pennsylvania and has been appointed division engineer, special duty, on the staff of the chief engineer maintenance of way, western region, with the same headquarters.

Ernest R. Shultz, whose appointment as chief engineer of maintenance of way, Eastern region, of the Pennsylvania was announced in the September 22 issue of *Railway Age,* was born in Kimmel, Pa., on October 25, 1903. He was graduated in 1924 from Pennsylvania State College with a B. S. degree in civil engineering. Mr. Shultz entered the service of the Pennsylvania that year as assistant, engineers corps, in the office of the division engineer at New Castle, Pa. In March, 1926, he resigned to accept a position as assistant city engi-



Ernest R. Shultz

neer there, which position he held until October, 1926, when he returned to the Pennsylvania in the capacity of chief draftsman at New Castle. In 1927, he was elevated to assistant supervisor—track, Pittsburgh division, later being transferred to the Eastern division with headquarters at Alliance, O. In 1929 he became supervisor—track, at Ravenna, O., on the Cleveland division, and served in that capacity at various places until 1940 when he became a division engineer of the Columbus division. In 1942, Mr. Schultz was transferred to the Philadelphia terminal division, which position he filled until April, 1943, when he was assigned to special duty in the office of the chief engineer. In November, 1943, he was promoted to engineer, maintenance of way, Northwestern division and on September 16, 1945, to chief engineer of maintenance of way, Eastern division.

W. M. Vandersluis, whose retirement as general superintendent of telegraph and signals of the Illinois Central was reported in the *Railway Age* of October 6, was born at Big Rapids, Mich., on July 12, 1880, and was graduated from the University of Michigan in 1902, entering railway service on the Pittsburgh, Fort Wayne & Chicago (now part of the Pennsylvania). Later he served for two years as a signal inspector on the Pennsylvania, Lines West. In 1906 he was appointed superintendent of signal construction on the Coast Lines of the Southern Pacific. Later in the same year he was appointed signal engineer of the Cleveland, Cincinnati, Chicago & St. Louis and the Pittsburgh & Lake Erie. From 1907 to 1912 Mr. Vandersluis served in the Chicago office of the Union Switch & Signal Co. and was then appointed signal engineer of the Illinois Central. During the World War he served as a captain in the Thirty-fifth Engineers at Camp Grant, and with the American Expeditionary Forces as a major in the Motor Transport service and signal engineer in the Transportation service. Upon his return to the United States he resumed the position of signal engineer of the Illinois Cen-

tral and in 1921 he was appointed secretary of the Illinois Central Electrification Commission—Chicago terminals. He was appointed electrical engineer of the Chicago Terminal Improvement in 1926. His promotion to general superintendent of telegraph and signals became effective on June 10, 1930.

MECHANICAL

F. E. Russell, chief mechanical engineer of the Southern Pacific, with headquarters at San Francisco, Cal., has retired after 46 years of service.

A. H. Faerber, superintendent of shop of the New York Central at East Buffalo, N. Y., has retired after more than 40 years of service. **C. N. Kittle,** division general car foreman at Buffalo, N. Y., succeeds him.

F. M. Mozley, master mechanic of the Southern division of the Gulf, Colorado & Santa Fe at Temple, Tex., has been transferred to the Gulf division, with headquarters at Galveston, Tex., succeeding **D. J. Everett,** who in turn has been transferred to the Southern division, replacing Mr. Mozley.

Ivan R. Pease, whose appointment as superintendent of motive power of the New York, Ontario & Western at Middleton, N. Y., was announced in the *Railway Age* of October 6, was born on July 7, 1898, at Wilton, Me. Mr. Pease attended the University of Maine and entered railroading in 1924 as special apprentice with the New York, New Haven & Hartford. He subsequently served in the New Haven locomotive shops as gas engine mechanic, foreman of the gas rail car department, and production assistant. From 1931 to 1934, he served with the New England Transportation Company (subsidiariy of the New Haven) and from 1934 to 1937 with the Universal Motor Mileage Corporation at Boston, Mass. In 1937 he became test supervisor of the New Haven and, in 1941,



Ivan R. Pease

supervisor of apprentices. He was appointed assistant to superintendent motive power of the N. Y., O. & W. later that year, which position he held until 1942, when he was appointed assistant superintendent motive power, serving in this capacity for the New York, Susquehanna & Western as well. His advancement to superintendent of motive power at Middleton became effective October 1.

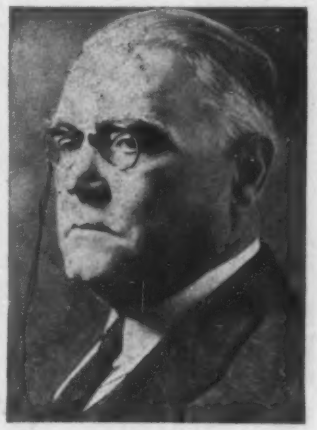
SPECIAL

Charles H. Frame, district manager of public relations of the Railway Express Agency in New York, has retired after more than 52 years of service. **J. E. Carter,** general agent at Richmond, Va., has been appointed to succeed him.

Clifford Strickland, recently a major in the United States Army in charge of the management and procedures bureau at Atlanta, Ga., has been appointed manager of the newly-established department of office methods and procedures of the Baltimore & Ohio.

OBITUARY

Ernest A. deFuniak, freight traffic manager of the Louisville & Nashville at Louisville, Ky., died on September 30 in a



Ernest A. deFuniak

hospital in that city. Mr. deFuniak, who was born on August 2, 1868, in Hernando, Miss., was graduated from Rugby, entered railroading as a bill clerk of the Texas & St. Louis (now St. Louis South Western) in 1884, becoming consecutively a local freight office cashier and a cashier and chief clerk, freight office. Mr. deFuniak served as a joint agent of the Louisville & Nashville and of the East Tennessee, Virginia, & Georgia (now Southern) from 1887 to 1889, becoming rate clerk, general freight office, of the L. & N. in 1890 and chief clerk in general agent's office, at Burlington, Ala., in 1891. In 1892, he was advanced to general agent there, which post he occupied until 1904. During the period 1904 to 1929 he was general freight agent of the same road at Montgomery, Ala., and at Louisville, Ky. In November, 1929, he was elevated to freight traffic manager, the position he held at the time of his death.

Robert C. Arnoll, secretary of the Rutland and treasurer and purchasing agent for the trustees of the company, died at his home in Rutland on September 3, 1945.

Michael J. Gormley, retired executive assistant of the Association of American Railroads, died at his home in Washington, D. C., on October 4. Mr. Gormley has been credited with having done more than any other individual to prevent government operation of the railroads during World War II. Between wars he devoted much time and effort to the education of the Army in the proper use of railroad equipment.



Michael J. Gormley

In 1921, he delivered a lecture at the Army War College in Washington, D. C., concerning transportation problems in wartime. The Gormley lecture thereafter became an annual feature of the course at the War College, its beneficial results reflected by the successful military transportation during World War II. Many who are now top Army officers had heard Mr. Gormley speak. His work with the Army and Navy Munitions Board during the 1939 and 1940 period and his function as liaison between the railroad industry and the armed services paved the way for uncongested wartime operations.

Mr. Gormley, who would have been 70 on October 9 was born in Watertown, Wis. He entered railroading in 1893 as a clerk and laborer on the Chicago & North Western, subsequently holding various positions with that road including chief clerk, trainmaster, assistant to vice-president, and assistant to president. He resigned from the latter in 1917 to become the American Railroad Association's general agent at Chicago. In the following year he was appointed operating assistant to the regional director of the United States Railroad Administration, later becoming assistant regional director. Following return of the railroads to private operation he became director of transportation of the American Petroleum Institute. Within a year Mr. Gormley rejoined A. R. A. as chairman of the Car Service Division. In 1929 he became executive vice-president, still retaining the chairmanship of the division, and serving in both these capacities until his election to the presidency of the A. R. A. in 1933. A year later when the A. R. A. was absorbed by the newly-organized Association of American Railroads, Mr. Gormley became executive assistant of the latter—the position from which he retired on December 31, 1944.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1945

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Railway tax accruals	Net railway operating income 1945	Net railway operating income 1944
Akron, Canton & Youngstown	Aug.	171	304,016	288	322,879	92,459	39,126	17,578	113,739	279,517	86.6	43,362	19,941	4,241	68,175
	8 mos.	171	2,984,134	1,395	3,120,632	641,480	303,622	148,859	957,389	2,197,381	70.4	923,251	387,495	364,739	549,370
Alton	Aug.	959	1,816,809	725,966	2,888,157	520,463	560,627	78,077	1,030,311	2,316,107	80.2	572,050	323,391	44,695	219,000
	8 mos.	959	16,998,016	5,623,458	25,434,180	3,336,446	3,908,479	585,763	8,534,725	17,399,354	68.4	8,034,826	3,249,090	3,181,520	2,643,107
Atchison, Topeka & Santa Fe System	Aug.	13,115	34,253,867	8,170,689	45,282,363	8,010,209	8,480,042	632,236	12,793,782	30,522,931	67.4	14,759,432	9,784,126	3,810,250	4,738,487
	8 mos.	13,115	285,434,693	69,761,961	379,112,392	53,726,936	61,991,438	5,119,053	100,975,364	227,119,963	59.9	151,992,429	107,145,146	39,745,127	34,328,485
Atlanta & West Point	Aug.	93	232,911	173,597	446,178	45,475	60,656	11,104	159,831	296,623	66.5	149,555	97,567	26,630	38,362
	8 mos.	93	2,179,931	1,111,010	3,628,350	390,385	498,296	87,250	1,316,294	2,446,449	67.4	1,181,901	734,312	244,130	266,345
Western of Alabama	Aug.	133	225,374	170,263	427,578	46,696	68,682	11,332	142,192	287,451	67.2	140,127	100,504	37,858	44,322
	8 mos.	133	2,094,096	1,152,504	3,524,894	464,627	538,291	86,517	1,175,047	2,407,025	68.3	1,117,869	781,370	307,952	375,619
Atlanta, Birmingham & Coast	Aug.	639	572,751	60,968	663,348	124,863	124,959	32,143	268,975	574,160	86.6	89,188	36,887	22,048	24,153
	8 mos.	639	5,367,958	412,213	6,050,676	922,054	927,853	243,931	2,310,722	4,601,141	76.0	1,449,535	817,509	315,615	271,421
Atlantic Coast Line	Aug.	4,935	5,749,880	3,372,083	9,762,234	2,115,679	2,345,895	196,508	3,706,719	8,768,574	89.8	993,660	750,000	175,625	617,818
	8 mos.	4,935	64,156,044	27,641,195	97,885,154	15,358,265	18,420,036	1,610,977	31,552,286	70,219,484	71.7	27,665,670	19,100,000	5,369,719	9,940,358
Charleston & Western Carolina	Aug.	343	290,762	25,747	328,036	68,156	69,865	10,727	132,193	288,882	88.1	39,154	20,000	1,862	26,536
	8 mos.	343	2,663,448	148,181	2,885,329	526,600	524,567	84,558	1,029,223	2,218,491	76.9	666,838	330,000	289,810	572,074
Baltimore & Ohio	Aug.	6,130	24,417,921	4,014,301	30,007,766	4,672,200	6,467,267	544,389	10,593,109	23,418,566	78.0	6,589,200	2,454,295	3,669,111	3,960,308
	8 mos.	6,131	209,350,813	33,229,876	255,902,509	34,410,781	52,285,219	4,256,864	87,540,386	187,479,004	73.3	68,423,505	32,632,571	30,471,018	31,182,711
Staten Island Rapid Transit	Aug.	29	251,762	176,102	443,019	48,853	47,277	1,221	147,442	270,386	61.0	172,633	69,844	84,488	97,057
	8 mos.	29	2,558,637	1,162,323	3,809,727	449,320	385,816	11,505	1,296,758	2,346,431	61.6	1,463,296	532,753	695,043	852,594
Bangor & Aroostook	Aug.	602	494,809	101,352	613,207	179,124	130,824	5,982	195,714	547,160	89.2	66,047	55,131	46,660	28,703
	8 mos.	602	6,283,161	633,859	7,175,807	1,421,347	1,052,849	49,863	1,910,535	4,710,903	65.6	2,464,904	1,771,584	785,244	926,376
Bessemer & Lake Erie	Aug.	214	1,697,585	2,388	1,713,785	154,893	750,068	13,608	366,088	1,323,413	77.2	390,372	227,080	357,729	553,516
	8 mos.	214	12,342,992	19,071	12,478,746	1,163,557	5,986,247	106,597	2,703,320	10,281,173	82.4	2,197,573	1,558,099	2,432,962	2,992,211
Boston & Maine	Aug.	1,789	4,684,553	1,885,406	7,186,335	1,278,985	1,226,095	97,440	2,503,292	5,366,145	74.7	1,820,190	792,701	858,650	903,202
	8 mos.	1,789	38,981,929	13,042,267	57,150,227	9,552,911	10,265,104	723,092	21,006,856	43,532,492	76.2	13,617,735	5,691,965	5,574,473	6,712,640
Burlington, Rock Island	Aug.	228	150,947	75,454	247,104	42,027	33,295	3,315	96,089	190,429	77.1	56,675	9,129	5,478	59,689
	8 mos.	228	1,470,666	581,308	2,192,479	263,161	239,992	29,993	735,444	1,390,960	63.4	801,519	64,372	396,825	393,054
Cambria & Indiana	Aug.	35	126,014	.....	126,074	11,879	48,288	583	17,608	85,110	67.51	40,964	79,605	48,293	56,335
	8 mos.	35	1,086,380	.....	1,087,076	95,626	374,642	4,776	145,850	677,056	62.28	410,020	724,474	397,103	428,212
Canadian Pacific Lines in Maine	Aug.	234	305,523	131,926	493,840	92,727	78,877	6,719	161,696	356,407	72.7	137,433	21,762	40,528	55,627
	8 mos.	234	3,616,291	754,336	4,657,038	607,168	620,391	53,144	1,476,400	2,852,361	61.2	1,804,677	177,250	951,962	1,134,111
Canadian Pacific Lines in Vermont	Aug.	90	69,464	30,857	115,690	31,414	27,823	2,435	97,575	164,931	142.6	—49,241	9,382	—93,898	—63,105
	8 mos.	90	673,998	148,767	923,735	288,213	238,216	19,354	799,984	1,387,053	150.2	—463,318	80,926	—840,450	—671,080
Central of Georgia	Aug.	1,815	2,016,167	681,386	3,070,666	428,568	607,064	66,603	1,254,226	2,502,173	81.5	568,493	182,733	437,214	792,767
	8 mos.	1,815	18,140,911	5,722,077	26,487,796	3,720,558	4,922,273	573,095	10,148,212	20,526,835	77.5	5,960,961	1,946,169	3,683,352	4,573,918
Central of New Jersey	Aug.	654	3,567,736	678,436	4,524,643	549,226	854,277	58,697	1,856,907	3,498,054	77.3	1,026,589	434,713	382,759	678,005
	8 mos.	654	32,016,297	4,853,265	39,391,078	4,079,008	7,016,206	472,923	15,823,878	28,803,820	73.1	10,587,258	4,338,084	4,213,571	3,669,645
Central Vermont	Aug.	422	553,128	98,000	710,792	131,600	115,527	9,727	315,496	598,400	84.2	112,392	38,931	19,075	43,987
	8 mos.	422	4,472,583	637,000	5,559,221	899,140	966,343	77,982	2,647,280	4,819,634	86.7	739,587	247,436	39,772	594,991
Chesapeake & Ohio	Aug.	3,079	14,508,666	2,085,729	17,331,958	2,757,001	3,813,180	284,049	5,037,215	12,486,718	72.0	4,845,240	2,523,001	2,718,310	2,875,773
	8 mos.	3,077	122,763,369	13,461,770	141,326,917	19,263,054	31,104,729	2,045,444	40,151,311	97,047,996	68.7	44,278,921	27,222,535	21,307,830	22,322,400
Chicago & Eastern Illinois	Aug.	912	1,764,076	572,621	2,554,597	327,992	509,452	68,675	910,880	1,920,066	75.2	634,531	233,500	218,476	139,846
	8 mos.	912	14,800,660	4,531,581	21,174,674	2,571,823	3,671,076	560,934	7,477,205	15,131,094	71.5	6,043,580	2,528,300	1,963,477	2,325,278
Chicago & Illinois Midland	Aug.	131	500,972	348	534,912	129,163	93,777	21,740	142,870	415,387	77.7	119,525	56,704	68,989	81,611
	8 mos.	131	4,192,345	4,082	4,430,189	699,539	726,984	181,239	1,119,295	2,948,561	66.6	1,481,628	907,587	629,397	655,075
Chicago & North Western	Aug.	8,065	10,173,701	3,450,757	15,167,748	2,207,903	2,804,970	228,885	5,119,373	10,960,424	72.5	4,147,324	2,098,622	1,971,377	2,028,301
	8 mos.	8,068	76,460,501	24,861,936	113,457,648	15,995,555	21,876,808	1,780,702	38,819,913	82,678,574	72.9	30,779,074	16,059,592	15,119,577	15,746,915
Chicago, Burlington & Quincy	Aug.	8,964	17,193,706	3,879,592	22,754,546	4,103,186	3,070,564	284,241	5,385,689	13,435,000	59.0	9,319,546	5,398,680	3,569,716	3,764,151
	8 mos.	8,978	132,374,429	24,678,053	170,956,623	25,783,375	23,906,709	2,302,533	41,221,402	97,701,527	57.1	73,255,096	48,762,007	22,468,581	18,148,518
Chicago Great Western	Aug.	1,500	1,955,885	264,320	2,408,925	407,493	334,889	64,562	913,497	1,793,993	74.5	614,932	252,247	212,136	246,992
	8 mos.	1,500	16,666,447	1,804,348	20,008,589	3,105,936	2,713,182	523,359	7,446,346	14,382,669	71.9	5,625,920	2,532,853	1,883,159	2,142,961
Chicago, Indianapolis & Louisville	Aug.	541	828,106	71,606	956,507	120,727	178,157	32,209	328,881	697,219	72.9	259,288	47,176	162,033	176,448
	8 mos.	541	7,190,194	534,143	8,243,502	934,812	1,513,014	270,807	2,682,779	5,708,091	69.2	2,535,411	653,829	1,457,853	1,842,109

(Table continued on next left-hand page)





Kansas City Southern 2-10-4s built by Lima

THE MOST FOR YOUR DOLLAR

The high-speed steam locomotive pays the highest returns, on the dollars invested, of any type of motive power, considered on the basis of initial cost, performance, and maintenance expense.

And Lima's insistance upon the highest standards of workmanship and materials assures the efficient performance of Lima-built steam power throughout years of heavy service.

LIMA LOCOMOTIVE WORKS INCORPORATED, LIMA, OHIO

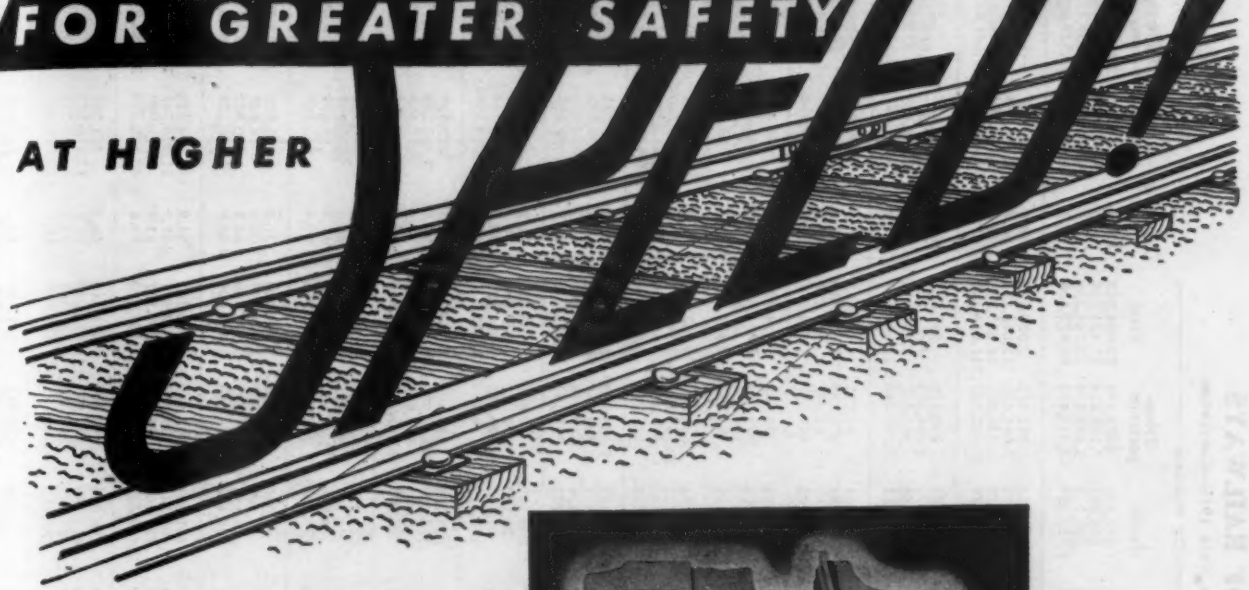
REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1945—CONTINUED

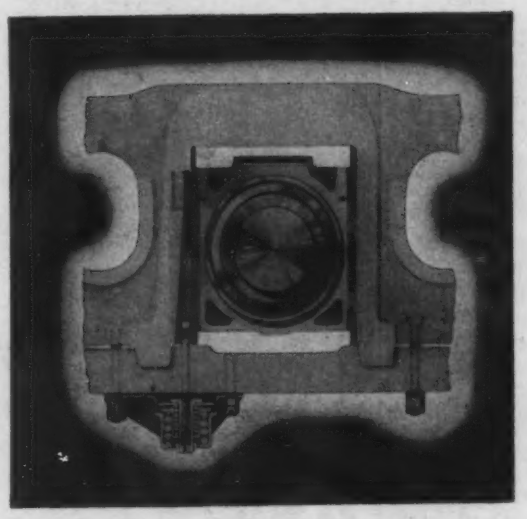
Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Railway tax accruals	Net railway operating income 1945	1944
Chicago, Milwaukee, St. Paul & Pacific	Aug.	10,730	$14,766,727	$3,589,288	$20,279,566	$4,407,736	$3,265,548	$298,367	$6,639,392	$15,347,173	75.7	$4,932,393	$2,071,000	$2,457,473	$3,006,241
	8 mos.	10,725	117,260,348	24,780,605	155,483,214	30,422,358	25,525,606	2,404,377	51,361,200	115,270,086	74.1	40,213,128	19,116,000	19,525,892	20,796,307
Chicago, Rock Island & Pacific	Aug.	7,753	12,190,618	3,815,400	17,168,088	2,938,451	2,399,996	350,036	4,806,232	11,117,797	64.8	6,050,291	2,691,798	2,599,580	3,491,598
	8 mos.	7,750	97,545,189	28,005,533	135,240,423	19,357,564	18,847,816	2,805,748	38,145,753	83,969,013	62.1	51,271,410	27,318,057	19,485,260	20,905,695
Chicago, St. Paul, Minneapolis & Omaha	Aug.	1,617	1,814,867	510,386	2,547,445	359,569	354,737	41,364	943,940	1,785,738	70.1	761,707	279,808	403,775	363,972
	8 mos.	1,617	13,601,324	3,071,024	18,294,007	2,556,426	2,727,855	327,142	7,352,291	13,620,566	74.5	4,673,441	1,687,971	2,493,055	2,111,182
Clinchfield	Aug.	302	1,016,928	13,358	1,039,841	99,409	199,187	21,910	269,141	610,170	58.7	429,671	107,040	348,168	534,335
	8 mos.	302	9,315,730	91,143	9,477,554	796,074	1,578,779	178,204	2,130,104	4,852,367	51.2	4,625,187	1,035,592	3,793,634	4,198,197
Colorado & Southern	Aug.	748	689,844	347,395	1,141,675	249,423	226,041	18,346	425,294	969,938	85.0	171,737	44,545	44,870	173,039
	8 mos.	748	7,436,206	2,184,486	10,447,063	1,621,828	1,753,824	143,745	3,332,140	7,240,911	69.3	3,206,152	1,187,165	1,561,054	1,868,886
Fort Worth & Denver City	Aug.	804	826,312	418,196	1,353,893	310,521	240,187	26,847	344,084	989,722	73.1	364,171	—318,084	644,085	276,754
	8 mos.	804	6,997,558	3,269,862	11,140,017	2,599,575	1,655,165	216,096	2,867,247	7,821,985	70.2	3,318,032	1,392,943	1,573,755	2,119,089
Colorado & Wyoming	Aug.	42	72,819	.....	124,020	11,256	19,823	720	46,725	83,051	66.9	40,969	21,760	18,796	22,930
	8 mos.	42	616,607	.....	1,027,101	107,121	156,443	5,971	392,039	698,759	68.0	328,342	173,743	154,842	261,960
Columbus & Greenville	Aug.	168	90,685	11,603	109,593	28,034	20,039	4,089	45,697	112,678	102.8	—3,085	14,533	—15,979	9,345
	8 mos.	168	950,496	73,565	1,088,678	262,697	158,493	36,682	372,445	948,144	87.1	140,534	118,945	37,948	70,739
Delaware & Hudson	Aug.	846	3,245,165	268,945	3,641,095	517,230	982,775	46,194	1,348,760	3,014,015	82.8	627,080	295,367	328,814	579,514
	8 mos.	846	29,346,645	1,600,498	31,858,716	4,070,786	8,355,652	386,467	11,515,693	25,277,177	79.3	6,581,539	2,859,763	3,335,321	5,766,420
Delaware, Lackawanna & Western	Aug.	973	4,528,391	1,000,396	6,093,311	867,853	1,089,387	109,836	2,573,159	4,829,523	79.3	1,263,788	539,000	668,098	799,619
	8 mos.	973	38,548,192	7,375,622	50,684,613	6,361,712	8,824,019	920,847	21,753,530	39,358,562	77.7	11,326,051	6,767,633	3,443,580	8,101,262
Denver & Rio Grande Western	Aug.	2,386	5,302,253	871,661	6,438,927	766,405	1,284,846	108,024	1,926,777	4,307,181	66.9	2,131,746	1,708,320	286,305	1,250,648
	8 mos.	2,386	43,803,612	6,471,496	52,360,406	5,500,055	9,341,716	806,130	14,652,486	31,912,904	60.9	20,447,502	10,929,878	8,688,650	9,192,588
Denver & Salt Lake	Aug.	232	269,882	11,386	294,785	83,476	58,453	3,038	94,066	251,016	85.2	43,769	30,447	38,152	112,263
	8 mos.	232	1,915,042	74,216	2,077,105	405,929	439,982	26,233	686,148	1,655,083	79.7	422,022	239,964	572,870	549,422
Detroit & Mackinac	Aug.	230	72,818	12,667	92,811	13,636	16,363	627	31,547	65,982	71.1	26,829	4,334	19,497	2,690
	8 mos.	230	507,516	86,309	657,255	152,305	128,205	6,439	251,459	568,627	86.5	88,628	34,942	28,548	19,952
Detroit & Toledo Shore Line	Aug.	50	275,292	.....	277,055	44,040	26,212	9,286	97,152	185,400	66.9	91,655	—290	40,803	56,523
	8 mos.	50	2,861,044	.....	2,873,966	305,773	230,925	81,073	823,148	1,510,807	52.6	1,363,159	455,316	431,823	468,964
Detroit, Toledo & Ironton	Aug.	464	554,606	1,864	590,762	101,852	136,116	14,979	196,855	475,190	80.4	115,572	59,129	56,697	121,134
	8 mos.	464	5,826,960	12,355	6,070,406	776,210	1,005,208	122,042	1,679,383	3,791,397	62.5	2,279,009	1,026,791	1,248,808	1,369,757
Duluth, Missabe & Iron Range	Aug.	546	4,752,924	7,295	5,493,926	465,187	552,609	4,555	1,026,807	2,089,844	38.0	3,404,082	1,397,830	2,010,292	2,162,326
	8 mos.	546	23,423,148	45,980	27,096,493	3,109,002	4,430,087	39,535	5,563,790	13,478,726	49.7	13,617,767	6,296,638	7,418,614	7,624,841
Duluth, Winnipeg & Pacific	Aug.	175	196,000	3,200	207,100	57,880	29,407	2,368	91,695	185,838	89.7	21,262	17,622	—21,368	2,743
	8 mos.	175	1,766,000	21,500	1,828,300	391,994	245,495	19,138	748,573	1,438,302	78.7	389,998	145,191	30,907	265,299
Elgin, Joliet & Eastern	Aug.	392	1,718,687	10	2,087,562	273,039	783,870	16,763	881,345	2,020,043	96.8	67,519	78,514	—97,432	249,073
	3 mos.	392	19,543,384	328	22,781,399	2,213,159	6,229,970	138,957	8,050,301	17,152,410	75.3	5,628,989	2,701,419	2,269,131	2,076,856
Erie	Aug.	2,243	9,096,895	1,466,877	11,325,732	1,567,384	2,220,638	228,021	4,721,315	9,531,751	84.2	1,793,981	126,317	1,093,207	1,458,692
	8 mos.	2,243	84,524,390	8,395,805	99,336,373	10,561,445	17,964,692	1,877,955	39,232,439	73,973,124	74.5	25,363,249	8,913,887	11,038,718	13,714,065
Florida East Coast	Aug.	682	840,612	979,992	1,988,747	328,788	354,364	94,183	671,047	1,569,795	78.9	418,952	112,193	279,077	340,338
	8 mos.	682	10,217,313	9,173,640	21,131,772	2,686,221	2,644,313	479,928	6,277,943	13,122,395	62.1	8,009,377	3,635,993	3,610,612	4,547,011
Georgia Railroad	Aug.	328	638,732	187,043	866,400	77,634	145,156	22,304	317,503	585,371	67.6	281,029	33,641	235,195	222,258
	8 mos.	328	5,011,098	1,211,443	6,576,098	778,490	1,107,866	178,566	2,565,454	4,814,005	73.2	1,762,093	265,269	1,482,990	2,105,838
Georgia & Florida	Aug.	408	108,724	2,488	114,404	30,064	20,801	10,962	44,512	113,768	99.4	636	9,390	—26,771	36,822
	8 mos.	408	1,381,860	39,525	1,461,827	380,084	218,868	86,251	522,865	1,268,969	86.8	192,858	86,106	19,770	121,199
Grand Trunk Western	Aug.	1,026	2,328,000	531,000	3,089,000	672,618	532,443	37,163	1,224,211	2,586,664	83.7	502,336	164,398	350,324	417,754
	8 mos.	1,026	20,422,000	2,734,000	24,806,000	4,534,932	4,177,574	298,685	9,815,197	19,712,566	79.5	5,093,434	1,587,033	3,204,030	3,439,119
Canadian National Lines in New England	Aug.	172	132,200	22,000	176,700	62,291	30,551	2,281	81,898	201,418	114.0	—24,718	21,189	—91,439	—102,667
	8 mos.	172	1,303,600	108,600	1,612,500	412,525	233,799	18,158	802,360	1,659,883	102.9	—47,383	169,512	—547,215	—728,974
Great Northern	Aug.	8,371	15,583,438	2,060,735	19,064,350	2,886,782	3,003,913	226,318	5,278,828	11,908,498	62.5	7,155,852	2,407,928	4,489,914	3,350,293
	8 mos.	8,371	114,861,944	12,977,511	137,892,345	22,851,762	25,498,224	1,883,579	37,617,817	91,601,812	66.4	46,290,533	24,505,390	21,424,451	18,917,360
Green Bay & Western	Aug.	234	212,332	741	218,987	52,792	22,516	8,511	76,593	167,657	76.56	51,330	33,569	11,204	7,571
	8 mos.	234	1,776,423	4,356	1,832,941	525,109	185,741	68,154	594,470	1,446,717	78.92	386,224	268,981	63,689	126,286
Gulf & Ship Island	Aug.	259	199,787	67,540	285,075	53,299	29,375	3,140	99,791	191,669	67.2	93,406	61,548	15,634	2,121
	8 mos.	259	1,677,980	374,117	2,242,900	409,844	228,828	22,899	802,626	1,528,789	68.2	714,111	298,087	287,990	255,640

(Table continued on next left-hand page)

FOR GREATER SAFETY AT HIGHER SPEED!







Higher speeds and heavier loads demand provisions for safer locomotive operation.

•

Shake and vibration recorders show that **FRANKLIN E-2 RADIAL BUFFERS** reduce vertical bounce by 50%, decrease horizontal shake by 66%, and cut the acceleration of the vertical bounce by 62%.

The smoother riding that results means more than increased comfort — it means lower maintenance, increased locomotive availability, and greater safety.

FRANKLIN AUTOMATIC COMPENSATORS AND SNUBBERS, by preventing pound, minimize the wear on all locomotive bearings, and thus assure smoother and safer operation.

FRANKLIN RAILWAY SUPPLY COMPANY, INC.

NEW YORK • CHICAGO

In Canada: FRANKLIN RAILWAY SUPPLY COMPANY, LIMITED, MONTREAL

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1945—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Railway tax accruals	Net railway operating income: 1945	1944
Gulf, Mobile & Ohio	Aug.	1,945	$2,635,034	$324,467	$3,069,414	$596,115	$610,452	$90,039	$974,444	$2,404,569	78.3	$664,845	$190,231	$306,254	$401,442
	8 mos.	1,944	23,710,202	1,818,733	26,369,004	4,104,497	4,416,041	695,445	7,168,654	17,421,139	66.0	8,947,865	4,912,162	2,839,165	3,162,079
Illinois Central	Aug.	4,822	12,998,953	3,481,181	17,637,946	3,063,639	3,222,594	226,719	5,445,834	12,745,339	72.3	4,892,607	2,659,412	2,096,540	1,814,002
	8 mos.	4,823	114,534,348	23,219,222	147,028,988	21,085,907	25,897,302	1,752,323	42,417,493	96,622,108	65.7	50,406,880	31,539,000	17,130,043	17,597,040
Yazoo & Mississippi Valley	Aug.	1,524	1,861,335	374,916	2,354,346	664,570	391,502	39,252	892,171	2,080,549	88.4	273,797	—123,374	292,076	466,691
	8 mos.	1,524	18,911,807	2,760,212	22,861,081	4,168,164	2,754,484	301,756	7,044,438	15,012,192	65.7	7,848,889	4,077,192	2,947,655	3,158,463
Illinois Central System	Aug.	6,346	14,860,288	3,856,097	19,992,292	3,728,209	3,614,096	265,971	6,338,005	14,825,888	74.2	5,166,404	2,541,268	2,393,529	2,288,606
	8 mos.	6,347	133,446,155	25,979,434	169,890,069	25,254,071	28,651,786	2,054,079	49,461,931	111,634,300	65.7	58,255,769	35,661,662	20,121,001	20,799,806
Illinois Terminal	Aug.	476	595,833	184,248	869,210	142,989	116,818	19,585	290,128	595,682	68.53	273,528	150,295	102,499	127,230
	8 mos.	476	5,760,344	1,418,134	7,801,108	905,769	928,791	160,272	2,394,373	4,611,786	59.12	3,189,322	2,068,767	934,523	922,285
Kansas City Southern	Aug.	890	2,397,669	305,828	2,914,819	390,381	380,262	65,658	902,597	1,856,210	63.7	1,058,609	375,000	497,884	507,379
	8 mos.	890	22,651,651	2,188,300	26,501,301	3,381,556	3,535,262	521,351	7,197,348	15,646,674	59.0	10,854,627	5,160,000	4,059,615	3,759,570
Kansas, Oklahoma & Gulf	Aug.	328	380,382	2,225	385,453	61,056	29,460	10,405	80,923	194,485	50.5	190,968	88,269	75,817	78,928
	8 mos.	328	3,073,007	15,359	3,117,014	396,985	213,587	80,581	668,865	1,453,610	46.6	1,663,404	744,214	714,802	630,515
Lake Superior & Ishpeming	Aug.	156	293,437	202	354,541	38,254	27,544	762	62,637	136,774	38.6	217,767	106,485	120,613	154,604
	8 mos.	156	1,601,183	1,147	1,929,007	278,205	255,419	5,605	419,697	1,024,011	53.1	904,996	511,742	466,942	534,818
Lehigh & Hudson River	Aug.	96	234,467	.....	235,085	45,449	38,362	5,351	78,590	174,624	74.3	60,461	24,136	19,866	16,730
	8 mos.	96	2,170,555	—991	2,175,272	321,497	332,785	44,068	679,856	1,433,956	65.9	741,316	352,978	192,281	186,792
Lehigh & New England	Aug.	190	501,224	.....	514,902	57,746	129,546	7,272	154,536	367,657	71.4	147,245	70,884	85,567	126,217
	8 mos.	190	3,634,429	.....	3,676,979	429,256	1,046,982	62,352	1,193,827	2,892,349	78.7	784,630	393,111	558,346	897,717
Lehigh Valley	Aug.	1,259	5,558,091	764,021	6,717,049	859,532	1,178,815	113,294	2,660,890	5,037,266	75.0	1,679,783	1,090,804	295,891	1,423,783
	8 mos.	1,260	46,396,930	5,324,192	55,163,451	7,661,683	10,007,796	969,421	22,765,573	43,245,111	78.4	11,918,340	5,300,895	3,206,462	7,795,202
Louisiana & Arkansas	Aug.	834	1,267,460	160,077	1,471,278	168,314	172,333	35,546	379,490	804,136	54.7	667,142	393,724	186,451	201,906
	8 mos.	834	12,473,310	1,199,282	14,112,259	2,326,685	1,543,575	280,222	3,125,922	7,690,292	54.5	6,421,967	3,945,054	1,846,100	1,460,137
Louisville & Nashville	Aug.	4,754	11,938,487	3,032,017	15,853,894	2,096,590	3,634,878	227,372	5,336,862	11,866,549	74.8	3,987,345	2,625,193	1,884,780	2,183,606
	8 mos.	4,755	105,974,000	25,894,004	140,036,108	15,579,166	25,318,423	1,774,511	43,824,049	90,937,030	64.9	49,099,078	34,986,409	16,935,083	16,638,511
Maine Central	Aug.	988	1,229,966	409,519	1,782,192	506,570	315,145	16,326	640,394	1,527,316	85.7	254,876	56,917	167,976	178,172
	8 mos.	988	10,698,963	2,444,446	14,115,818	3,090,414	2,504,414	114,731	4,972,101	11,085,931	78.5	3,029,887	1,425,365	1,251,479	1,259,601
Midland Valley	Aug.	334	141,180	56	144,820	34,696	16,737	2,397	49,566	108,115	74.7	36,705	4,822	20,801	17,470
	8 mos.	334	1,153,786	1,038	1,175,099	228,884	115,598	20,132	378,066	779,980	66.4	395,119	125,416	195,429	154,766
Minneapolis & St. Louis	Aug.	1,408	1,218,767	55,733	1,325,635	313,809	212,448	69,104	399,841	1,054,855	79.6	270,780	121,460	142,818	146,101
	8 mos.	1,408	9,463,824	322,629	10,180,281	2,094,955	1,655,955	525,412	3,134,024	7,875,723	77.4	2,304,558	1,273,039	1,031,797	1,179,675
Minneapolis, St. Paul & Sault Ste. Marie	Aug.	3,224	2,096,657	179,838	2,454,258	432,118	355,246	38,225	923,400	1,824,701	74.3	629,557	373,818	268,308	246,865
	8 mos.	3,224	14,319,516	1,240,949	16,836,193	3,150,857	2,986,808	318,292	6,644,006	13,647,909	81.1	3,188,284	1,974,476	1,657,104	4,319,686
Duluth, South Shore & Atlantic	Aug.	550	300,438	34,625	367,471	82,730	52,532	10,684	135,860	289,973	78.9	77,498	19,920	55,821	58,261
	8 mos.	550	2,461,152	185,694	2,853,929	563,141	468,862	89,093	1,105,285	2,291,572	80.3	562,357	142,707	401,112	448.008
Spokane International	Aug.	152	171,598	4,605	186,554	47,272	28,616	3,276	48,446	134,623	72.2	51,931	23,478	16,553	21,898
	8 mos.	152	1,399,999	38,027	1,517,254	338,736	135,958	26,107	360,675	919,257	60.6	597,997	324,115	182,977	160,442
Mississippi Central	Aug.	158	161,325	13,703	178,819	30,513	27,968	8,939	47,940	122,140	68.3	56,679	18,655	23,497	26,987
	8 mos.	158	1,255,414	42,543	1,329,741	264,641	157,230	72,278	332,991	882,976	66.4	446,765	154,300	190,687	254,229
Missouri & Arkansas	Aug.	365	153,840	3,021	164,268	59,804	27,082	7,087	98,434	199,070	121.2	—34,802	—43,599	—15,953	33,962
	8 mos.	365	1,493,605	17,950	1,576,956	536,697	207,897	61,502	728,587	1,591,481	100.9	—14,525	12,965	—270,490	168,388
Missouri-Illinois	Aug.	172	316,753	859	319,226	70,800	34,744	4,115	81,385	198,309	62.1	120,917	74,408	32,291	105,523
	8 mos.	172	2,342,237	4,563	2,357,215	377,931	300,253	35,490	578,653	1,341,091	56.9	1,016,124	686,542	291,547	322,081
Missouri-Kansas-Texas Lines	Aug.	3,253	7,138,906	1,308,369	8,955,095	1,691,264	867,435	141,386	1,976,149	4,910,701	54.8	4,044,394	2,901,416	788,724	381,174
	8 mos.	3,253	48,893,901	8,413,374	61,736,417	13,419,002	6,993,190	1,184,544	16,717,753	40,249,671	65.2	21,486,746	13,269,600	5,052,467	4,478,134
Missouri Pacific	Aug.	7,082	15,297,317	3,098,300	19,731,446	2,855,730	2,898,431	313,267	5,575,576	12,209,537	61.9	7,521,909	4,400,126	2,369,328	3,366,707
	8 mos.	7,082	120,089,568	22,422,365	153,672,072	18,688,606	22,225,372	2,449,237	43,358,873	91,151,793	59.3	62,520,279	35,382,927	21,426,795	22,303,266
Gulf Coast Lines	Aug.	1,734	2,126,860	284,500	2,528,900	574,464	366,997	59,934	888,603	1,977,140	78.2	551,760	.....	226,204	391,240
	8 mos.	1,734	26,583,228	2,387,562	30,129,104	4,917,868	2,962,046	453,369	7,677,871	16,712,932	55.5	13,416,172	.....	3,923,484	4,841,083
International-Great Northern	Aug.	1,110	1,748,647	482,773	2,467,105	517,787	369,143	37,605	807,382	1,833,363	74.3	633,742	238,485	230,580	280,757
	8 mos.	1,110	14,346,516	3,745,868	20,050,190	3,758,029	2,810,935	297,817	6,650,785	14,300,808	71.3	5,749,382	2,028,217	2,319,333	2,317,894
Monongahela	Aug.	170	503,793	2,977	510,710	76,918	47,818	698	138,784	268,290	52.5	242,430	74,851	70,691	99,079
	8 mos.	170	4,024,328	18,804	4,070,662	550,020	380,897	5,265	1,125,665	2,093,466	51.4	1,977,196	597,802	644,032	923,255

(Table continued on next left-hand page)

Availability

IS HIGHER

with Security Circulators

To help maintain the high standard of performance of Northern Pacific's big 4-6-6-4s, each of them is equipped with eight Security Circulators.

Compared with other locomotives, those with Security Circulators are available for continuous operation for longer periods because they have cleaner flues, longer arch life, and improved combustion, so that boiler maintenance is substantially reduced.

These advantages are in addition to an improved circulation of water over the crown sheet and in side water-legs.



AMERICAN ARCH COMPANY, INC.

NEW YORK • CHICAGO

SECURITY CIRCULATOR DIVISION

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1945—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Railway tax accruals	Net railway operating income 1945	Net railway operating income 1944
Montour	Aug.	51	$260,869	.....	$262,105	$23,743	$64,925	$982	$74,126	$171,617	65.5	$90,488	$63,313	$65,929	$77,674
	8 mos.	51	1,949,615	.....	1,959,451	165,859	477,785	8,058	598,767	1,319,957	67.4	639,494	460,273	474,812	524,995
Nashville, Chattanooga & St. Louis	Aug.	1,071	2,445,880	$560,796	3,225,694	591,221	648,342	81,623	1,039,844	2,463,893	76.4	761,801	589,902	171,513	144,220
	8 mos.	1,071	21,128,280	4,067,470	27,143,349	4,310,774	5,421,554	679,055	8,579,279	19,720,341	72.7	7,423,008	4,546,603	2,773,806	2,620,741
New York Central	Aug.	10,749	31,908,783	14,162,766	51,386,862	8,857,669	10,662,470	759,018	20,689,967	43,256,068	84.2	8,130,794	2,800,142	4,234,875	6,079,153
	8 mos.	10,749	297,386,358	109,699,166	451,711,926	67,495,929	87,232,737	5,965,642	173,188,308	352,140,010	78.0	99,571,916	48,603,185	37,933,923	46,126,984
Pittsburgh & Lake Erie	Aug.	229	2,368,941	117,107	2,569,185	368,221	871,734	46,298	897,750	2,294,529	89.3	274,656	452,799	395,975	468,144
	8 mos.	229	20,295,707	872,594	21,951,202	2,770,124	7,485,666	359,328	7,591,197	19,107,721	87.0	2,843,481	3,914,265	3,251,038	3,816,671
New York, Chicago & St. Louis	Aug.	1,687	5,953,810	337,718	6,464,105	831,813	1,319,604	155,063	2,338,801	4,886,440	75.6	1,577,665	341,498	917,239	954,034
	8 mos.	1,687	59,580,575	2,180,483	63,090,018	7,720,751	10,814,131	1,268,324	20,066,554	41,607,808	65.9	21,482,210	5,850,384	12,325,374	7,550,845
New York, New Haven & Hartford	Aug.	1,838	6,577,943	6,771,833	14,456,010	2,071,770	2,465,536	179,286	5,127,177	10,562,331	73.1	3,893,679	1,700,000	1,197,963	1,398,377
	8 mos.	1,838	59,458,541	50,419,948	119,150,075	14,932,175	19,299,290	1,295,558	42,416,926	83,829,582	70.4	35,320,493	14,010,005	12,578,327	15,738,908
New York Connecting	Aug.	21	186,090	.....	201,761	50,713	11,914	.....	44,698	109,668	54.4	92,093	65,767	203,987	113,074
	8 mos.	21	1,653,730	.....	1,837,951	401,137	115,957	.....	452,918	984,577	53.6	853,374	640,816	1,323,372	1,174,100
New York, Ontario & Western	Aug.	548	613,801	47,540	725,824	98,831	142,044	20,875	329,254	617,952	85.1	107,872	38,962	—3,937	—54,431
	8 mos.	548	4,956,675	177,608	5,671,472	765,214	1,154,957	177,270	3,192,933	5,511,433	97.2	160,039	328,329	—723,671	—367,660
New York, Susquehanna & Western	Aug.	120	287,619	41,006	340,911	36,004	37,783	4,168	132,650	225,829	66.2	115,082	28,750	48,000	91,835
	8 mos.	120	2,775,394	319,238	3,208,059	281,154	289,804	38,644	1,194,444	1,937,943	60.4	1,270,116	395,286	454,186	624,195
Norfolk & Western	Aug.	2,161	9,455,353	1,350,501	11,136,434	1,459,414	2,544,998	166,224	2,901,444	7,414,022	66.6	3,722,412	2,511,061	2,076,081	2,279,144
	8 mos.	2,159	90,321,239	9,201,744	102,534,331	11,796,078	20,582,262	1,382,733	24,280,599	60,715,047	59.2	41,819,284	31,376,821	16,632,510	17,396,342
Norfolk Southern	Aug.	727	584,429	32,481	634,452	147,116	75,881	31,084	219,015	502,028	79.1	132,424	56,143	53,885	90,288
	8 mos.	727	4,893,781	208,958	5,260,287	1,215,954	652,328	247,447	1,820,857	4,175,190	79.4	1,085,097	428,602	426,786	499,407
Northern Pacific	Aug.	6,873	10,233,050	1,719,924	13,079,408	2,432,503	2,575,697	197,924	4,015,634	9,780,924	74.5	3,298,484	601,700	2,944,766	1,763,230
	8 mos.	6,870	77,000,564	12,776,568	98,067,996	16,851,711	20,914,418	1,536,372	30,769,495	74,388,906	75.9	23,679,090	11,818,101	14,756,692	14,397,146
Northwestern Pacific	Aug.	331	619,543	15,393	663,181	167,473	71,539	3,061	236,695	487,311	73.5	175,870	28,936	103,520	124,906
	8 mos.	331	3,930,706	140,575	4,280,325	1,323,695	501,957	23,849	1,471,124	3,387,604	79.1	892,721	216,275	449,912	302,843
Oklahoma City-Ada-Atoka	Aug.	132	95,444	694	96,877	26,765	3,278	1,099	24,264	58,785	60.7	38,092	13,051	11,183	26,457
	8 mos.	132	847,385	2,422	858,168	194,100	34,152	9,488	213,851	483,776	56.4	374,392	141,758	121,171	234,352
Pennsylvania	Aug.	10,112	49,688,662	22,292,924	78,136,421	10,136,546	16,285,925	1,053,139	31,561,338	61,928,335	79.3	16,208,086	7,753,286	8,061,192	10,205,533
	8 mos.	10,112	435,061,335	167,919,878	654,044,829	76,807,692	124,491,725	8,413,813	270,458,353	503,270,838	76.9	150,773,991	71,562,087	71,870,497	72,816,428
Long Island	Aug.	376	1,223,238	3,301,496	4,724,874	524,864	541,794	22,975	1,807,964	2,955,361	62.5	1,769,513	791,882	707,161	822,040
	8 mos.	376	9,404,636	20,087,519	31,113,510	4,008,831	4,234,449	160,113	13,528,048	22,441,490	72.1	8,672,020	3,856,831	2,638,364	2,208,796
Pennsylvania-Reading Seashore Lines	Aug.	392	489,426	969,438	1,516,767	149,913	86,980	8,279	551,525	817,687	53.9	699,080	187,126	350,638	631,321
	8 mos.	392	3,829,624	4,308,097	8,435,311	1,270,491	793,636	65,912	3,897,279	6,209,276	73.6	2,226,035	944,516	275,248	736,094
Pere Marquette	Aug.	1,949	3,500,060	359,047	4,208,311	852,163	872,332	83,712	1,621,373	3,609,109	85.8	599,202	267,530	265,592	742,780
	8 mos.	1,949	33,344,542	2,414,981	37,634,115	6,538,818	6,977,229	654,147	13,655,354	29,208,952	77.6	8,425,163	3,003,315	4,743,112	3,437,468
Pittsburg & Shawmut	Aug.	97	118,660	.....	119,102	35,753	22,368	2,518	35,037	96,976	81.4	22,126	—2,523	19,150	25,060
	8 mos.	97	976,579	.....	982,223	215,460	183,381	15,357	289,176	745,648	75.9	236,575	37,091	181,315	166,492
Pittsburgh & West Virginia	Aug.	136	481,191	.....	497,352	122,287	104,557	24,641	154,347	433,426	87.1	63,926	—671	88,496	126,742
	8 mos.	136	4,896,030	104	5,037,809	829,184	883,137	194,046	1,302,699	3,432,861	68.1	1,604,948	736,943	1,033,627	1,086,126
Pittsburg, Shawmut & Northern	Aug.	190	66,755	.....	70,554	23,256	18,864	1,049	34,851	83,188	117.9	—12,634	6,198	—24,248	—9,736
	8 mos.	190	718,386	.....	729,838	175,283	153,727	8,530	338,394	718,802	98.5	11,036	51,523	—93,824	—52,301
Reading	Aug.	1,367	7,581,303	992,839	9,022,711	1,471,360	2,163,704	86,874	3,124,550	7,071,623	78.4	1,951,088	962,002	1,108,786	995,175
	8 mos.	1,367	65,314,147	7,330,639	76,154,444	9,993,139	16,522,077	695,447	26,458,281	55,453,694	72.8	20,700,750	11,239,985	9,386,985	9,723,355
Richmond, Fredericksburg & Potomac	Aug.	118	1,081,359	1,240,670	2,522,699	287,896	349,100	12,432	791,632	1,549,662	61.4	973,037	578,062	297,252	226,650
	8 mos.	118	11,886,505	9,315,961	23,182,472	2,151,207	2,783,347	114,953	6,606,886	12,527,369	54.0	10,655,103	7,363,390	2,196,713	2,227,132
Rutland	Aug.	407	289,378	90,847	452,258	87,671	79,616	12,592	220,958	415,827	91.0	36,431	26,906	5,330	13,114
	8 mos.	407	2,372,630	515,549	3,460,337	555,133	686,713	100,728	1,801,654	3,266,375	94.4	193,962	214,422	—41,523	854
St. Louis-San Francisco	Aug.	4,645	7,146,028	1,938,177	9,812,376	1,377,986	1,814,777	166,169	3,236,020	6,964,013	71.0	2,848,363	1,478,354	1,330,596	1,418,420
	8 mos.	4,646	57,770,424	14,231,621	78,017,893	10,230,680	13,803,279	1,365,714	24,956,624	53,180,009	68.2	24,837,884	13,308,153	11,598,591	10,746,766
St. Louis, San Francisco & Texas	Aug.	160	292,526	57,627	362,222	43,554	35,964	11,534	136,353	235,746	65.1	126,476	70,301	27,707	41,825
	8 mos.	160	2,251,351	322,642	2,655,937	291,419	268,621	93,571	926,015	1,641,022	61.8	1,014,915	530,609	261,202	315,518

(Table continued on next left-hand page)



Unserviceable Superheater Unit

Remanufactured Superheater Unit

Superheater units, properly reconditioned at our plant, provide long life, original efficiency, and more than justify the cost by eliminating enginehouse repairs.

Superheaters kept in good condition . . . help keep locomotives in service.

ELESCO

THE SUPERHEATER COMPANY

Representative of AMERICAN THROTTLE COMPANY, INC.
60 East 42nd Street, NEW YORK
122 S. Michigan Ave., CHICAGO
Montreal, Canada, THE SUPERHEATER COMPANY, LTD.

A-1742

Superheaters • Superheater Pyrometers • Exhaust Steam Injectors • Steam Dryers • Feedwater Heaters • American Throttles

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF AUGUST AND EIGHT MONTHS OF CALENDAR YEAR 1945—CONTINUED

Name of road		Av. mileage operated during period	Operating revenues: Freight	Passenger	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures	Maintenance of Equipment	Traffic	Transportation	Total	Operating ratio	Net from railway operation	Railway tax accruals	Net railway operating income: 1945	1944
St. Louis Southwestern Lines	Aug.	1,607	$4,674,253	$278,517	$5,119,960	$760,693	$633,123	$107,026	$1,238,125	$2,875,621	56.2	$2,244,339	$1,363,650	$601,515	$1,111,071
	8 mos.	1,607	45,379,173	2,276,830	49,019,815	5,094,472	5,087,948	841,653	10,888,375	23,019,623	47.0	26,000,192	16,414,154	7,105,666	6,717,844
Seaboard Air Line	Aug.	4,168	5,878,661	3,623,905	10,200,013	1,557,246	1,809,227	236,195	3,206,428	7,288,236	71.5	2,911,777	1,075,000	1,538,029	1,758,966
	8 mos.	4,170	58,611,410	26,210,602	90,770,439	12,472,611	15,323,623	1,976,623	27,850,886	61,472,540	67.7	29,297,899	13,265,000	12,873,858	15,155,350
Southern Railway	Aug.	6,505	13,024,446	4,652,460	18,889,382	2,777,048	3,618,195	271,219	6,196,367	13,565,057	71.8	5,324,325	3,446,175	1,703,832	3,011,570
	8 mos.	6,505	124,991,497	39,364,969	174,875,512	21,645,154	28,873,777	2,126,055	50,272,516	108,369,957	62.0	66,505,555	43,640,087	20,343,415	22,166,270
Alabama Great Southern	Aug.	315	1,051,848	346,717	1,483,357	225,713	283,588	29,958	494,289	1,089,126	73.4	394,231	258,673	110,956	155,833
	8 mos.	315	10,172,985	3,195,344	14,266,404	1,574,484	2,525,283	225,716	4,354,191	9,165,494	64.3	5,100,910	3,496,611	1,126,796	1,326,270
Cincinnati, New Orleans & Texas Pacific	Aug.	337	2,000,083	561,339	2,699,075	353,882	649,469	43,384	783,795	1,922,518	71.2	776,557	546,879	323,781	386,167
	8 mos.	337	17,899,247	4,639,453	23,855,603	2,634,388	5,331,972	332,516	6,519,666	15,563,715	65.2	8,291,888	5,766,865	3,049,427	3,347,853
Georgia Southern & Florida	Aug.	397	248,887	270,831	565,868	80,163	84,961	2,733	179,481	369,159	65.2	196,709	107,336	56,606	64,936
	8 mos.	397	2,254,869	1,875,590	4,553,068	580,827	630,620	22,867	1,409,087	2,790,653	61.3	1,762,415	946,785	539,639	469,620
New Orleans & Northeastern	Aug.	204	692,375	178,033	918,406	157,145	119,562	15,297	219,954	548,388	59.7	370,018	230,850	76,565	126,583
	8 mos.	204	6,395,970	1,587,350	8,406,099	1,121,123	983,486	115,221	2,055,143	4,596,016	54.7	3,810,083	2,359,504	832,960	779,686
Southern Pacific	Aug.	8,247	27,468,651	9,988,996	41,201,940	5,435,595	7,656,875	665,420	14,144,891	30,226,048	73.4	10,975,892	5,791,736	3,462,249	2,791,258
	8 mos.	8,247	233,482,312	70,318,826	332,666,068	44,486,965	60,773,620	5,311,356	105,456,873	233,429,437	70.2	99,236,631	61,284,971	25,204,763	25,866,213
Texas & New Orleans	Aug.	4,327	6,519,274	2,230,895	9,338,374	1,322,930	1,321,704	156,826	2,895,674	6,092,461	65.2	3,245,913	1,716,825	1,023,557	1,102,832
	8 mos.	4,328	62,473,587	16,485,200	84,032,139	11,259,874	11,033,601	1,277,880	23,597,189	50,239,874	59.8	33,792,265	20,043,610	9,340,224	10,664,586
Spokane, Portland & Seattle	Aug.	944	2,417,537	129,633	2,677,521	576,178	258,748	14,895	682,743	1,601,894	59.8	1,075,627	211,091	657,732	722,660
	8 mos.	944	16,485,743	1,360,136	18,831,801	4,786,017	1,833,166	115,545	5,129,894	12,391,839	65.8	6,439,962	2,175,665	2,935,562	2,565,886
Tennessee Central	Aug.	286	279,085	29,185	324,397	64,290	59,056	6,711	120,474	265,306	81.8	59,091	21,975	17,496	27,157
	8 mos.	286	2,240,723	259,126	2,640,540	507,523	474,183	54,871	952,057	2,108,186	79.8	532,354	210,193	194,088	352,701
Texas & Pacific	Aug.	1,873	4,536,470	1,619,255	6,651,109	935,093	886,992	118,418	1,781,889	4,005,151	60.2	2,645,958	1,387,424	995,233	549,809
	8 mos.	1,880	37,642,776	12,193,315	54,227,777	7,068,040	7,120,451	926,183	13,318,106	30,643,038	56.5	23,584,739	15,092,970	6,671,948	4,462,414
Texas Mexican	Aug.	162	158,770	625	177,564	21,272	21,505	4,129	40,710	105,160	59.2	72,404	19,717	35,664	75,826
	8 mos.	162	1,341,073	5,562	1,498,473	359,474	140,566	33,350	390,810	1,010,435	67.4	488,038	162,436	241,997	509,559
Toledo, Peoria & Western	Aug.	239	357,795	25	362,730	52,344	23,132	25,237	95,731	215,468	59.4	147,262	19,199	105,255	192,525
	8 mos.	239	3,307,084	118	3,340,733	357,504	210,393	197,186	758,608	1,641,256	49.1	1,699,477	149,479	1,349,761	1,678,917
Union Pacific System	Aug.	9,779	32,953,908	9,352,613	45,890,956	5,732,151	7,962,855	569,593	13,091,951	29,366,450	64.0	16,524,506	11,371,102	3,485,548	3,639,849
	8 mos.	9,781	259,485,133	61,116,823	347,454,579	42,155,768	63,155,954	4,777,016	95,264,146	220,318,298	63.4	127,136,281	90,070,657	28,277,174	23,638,489
Utah	Aug.	111	119,824	.....	119,856	15,877	42,333	521	37,358	100,408	83.8	19,448	6,478	15,021	10,176
	8 mos.	111	906,834	.....	907,061	119,693	311,971	4,345	276,797	747,927	82.5	159,134	108,399	107,995	80,171
Virginian	Aug.	656	2,171,362	12,687	2,270,296	293,142	695,041	26,515	519,142	1,592,821	70.2	677,475	261,400	527,776	595,935
	8 mos.	657	19,525,660	78,962	20,366,651	2,225,115	5,462,093	214,750	4,395,257	12,760,488	62.7	7,606,163	2,972,000	5,616,919	4,841,516
Wabash	Aug.	2,393	5,854,496	863,189	7,167,292	1,227,616	1,065,214	172,437	2,474,449	5,204,033	72.6	1,963,259	981,178	595,102	712,671
	8 mos.	2,393	54,028,970	6,854,012	64,672,505	8,536,947	8,442,757	1,433,028	20,403,546	40,838,550	63.1	23,833,955	14,334,659	6,217,570	6,037,325
Ann Arbor	Aug.	294	466,365	16,781	521,305	74,047	95,940	16,425	208,889	408,845	78.4	112,460	55,186	57,164	64,491
	8 mos.	294	3,901,659	89,968	4,138,175	522,729	733,704	133,932	1,666,271	3,155,512	76.3	982,663	459,744	501,223	464,520
Western Maryland	Aug.	840	2,437,880	58,540	2,573,128	484,050	569,380	48,990	743,507	1,957,307	76.1	615,621	200,000	463,291	521,815
	8 mos.	840	21,321,033	302,700	24,261,521	3,685,411	4,967,540	376,215	6,348,018	16,180,420	66.7	8,081,101	4,228,000	4,320,292	4,640,209
Western Pacific	Aug.	1,195	3,938,824	886,544	5,015,371	674,125	734,767	94,657	1,558,751	3,231,715	64.4	1,783,656	1,153,791	363,350	513,939
	8 mos.	1,195	33,219,151	5,742,996	40,249,386	5,287,980	5,459,810	742,125	11,243,547	24,422,418	60.7	15,826,968	9,811,429	4,440,060	4,415,016
Wheeling & Lake Erie	Aug.	507	1,969,483	3	2,073,490	319,908	433,518	42,130	653,669	1,500,659	72.4	572,831	502,187	261,901	288,318
	8 mos.	507	17,482,749	25	18,106,429	1,908,379	3,257,608	339,605	5,218,418	11,142,662	61.5	6,963,767	6,048,968	2,359,327	2,191,583
Wisconsin Central	Aug.	1,130	1,593,231	144,113	1,901,882	238,561	287,889	41,022	701,329	1,331,498	70.0	570,384	389,422	103,354	175,463
	8 mos.	1,130	12,285,889	763,189	14,232,213	1,798,276	2,131,306	335,448	5,549,813	10,346,163	72.7	3,886,050	1,841,199	1,869,134	2,237,710

ILLINOIS CENTRAL

Proves HSGI ECONOMIES



'WAY BACK WHEN
the I. C. first got acquainted with HSGI, this was a "hot shot" freight locomotive of that road.

A Mainstay in Maintenance for 35 Years

FIVE modern Illinois Central engines, poised with their long strings of freight bound for the South and West, offer dramatic contrast to the diminutively wheeled 639, representative of 1910 power. Today's I. C. locomotives incorporate a generation of improvements and changes since 1910; yet one thing remains the same. That is HUNT-SPILLER GUN IRON, which for 35 intervening years has continuously provided longer-wearing vital parts for Illinois Central engines.

None but a consistently dependable product could win and hold such loyalty. Only demonstrated economies could retain the custom of a large percentage of American railroads, 76 of which have been HSGI users for 35 years or more. Such records prove the benefits that come from using bushings, packing, and other wearing parts made from HUNT-SPILLER GUN IRON.

HUNT SPILLER GUN IRON HSGI *AIR FURNACE PROCESS*

HUNT-SPILLER MFG. CORPORATION

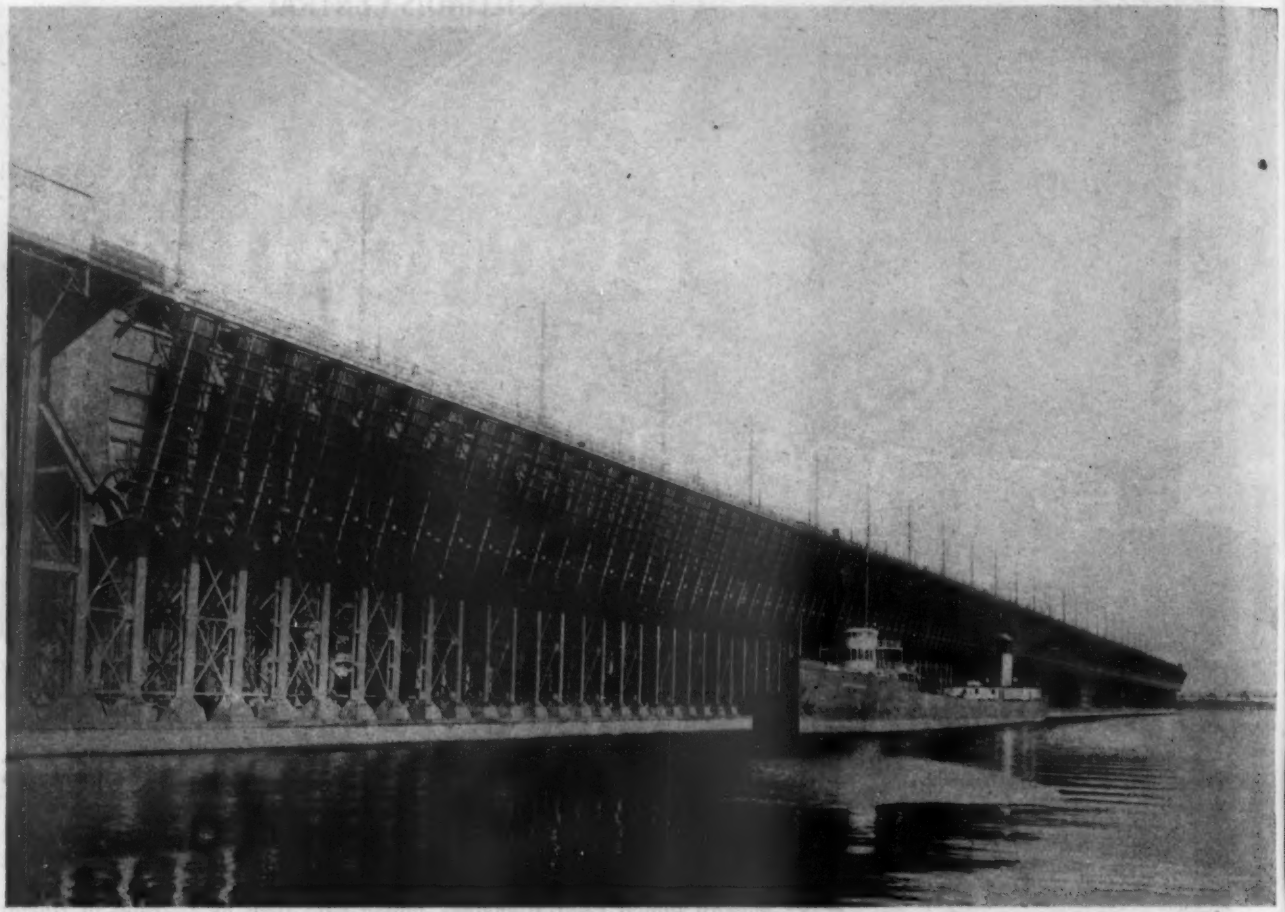
N. C. RAYMOND, *President* — E. J. FULLER, *Vice-Pres. & Gen. Mgr.*

383 Dorchester Ave. ★ South Boston 27, Mass.

Canadian Representative: Joseph Robb & Co., Ltd., 5575 Cote St. Paul Rd., Montreal, P. Q.
Export Agents:
International Rwy. Supply Co., 30 Church Street, New York 7, N. Y.

Cylinder Bushings	Crosshead Shoes	Dunbar Sectional Type Packing
Cylinder Packing Rings	Hub Liners	Duplex Sectional Type Packing for Cylinders and Valves
Pistons or Piston Bull Rings	Shoes and Wedges	(Duplex Springs for Above Sectional Packing)
Valve Bushings	Floating Rod Bushings	Cylinder Snap Rings
Valve Packing Rings	Light Weight Valves	Valve Rings, All Shapes
Valve Bull Rings	Cylinder Liners and Pistons for Diesel Service	

WE BUILD ORE DOCKS



Ore dock at Duluth, Minnesota
for
Duluth, Missabe, and Iron Range Railway.

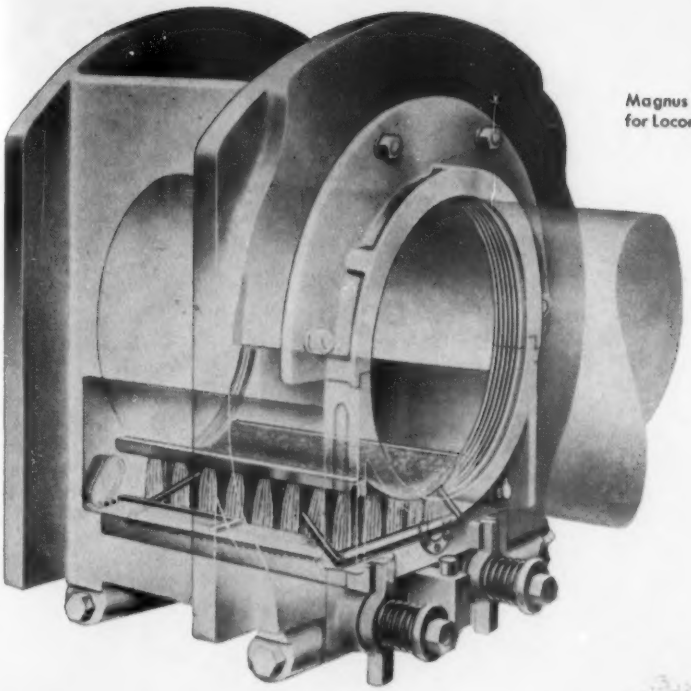
This is one of several ore docks built by us on the Great Lakes; the latest is the dock at Escanaba, Michigan, a war-time emergency project, for the U. S. War Department, Corps of Engineers.

ENGINEERING CONSTRUCTION DIVISION

MERRITT-CHAPMAN & SCOTT CORPORATION

FOUNDED
1860

17 BATTERY PLACE **NEW YORK 4, N. Y.**

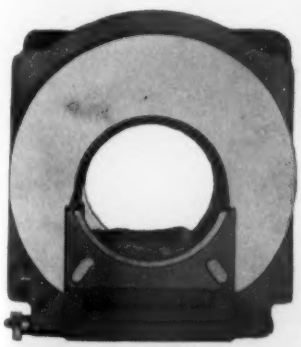


Magnus Oil Lubricator
for Locomotive Journals

Light Viscosity Oil Lubrication

Increases Journal Bearing Life!

Magnus Locomotive Journal Oil Lubricator, utilizing *light viscosity* oil, increases the life of both journal bearings and lateral facings as much as three to five times. As a result, road mileage between classified repairs is approximately doubled, quicker servicing lessens turn-around time, and shopping costs are greatly reduced.



Magnus Satco-Lined Lateral Hub Facing for engine-truck, trailer and driving boxes

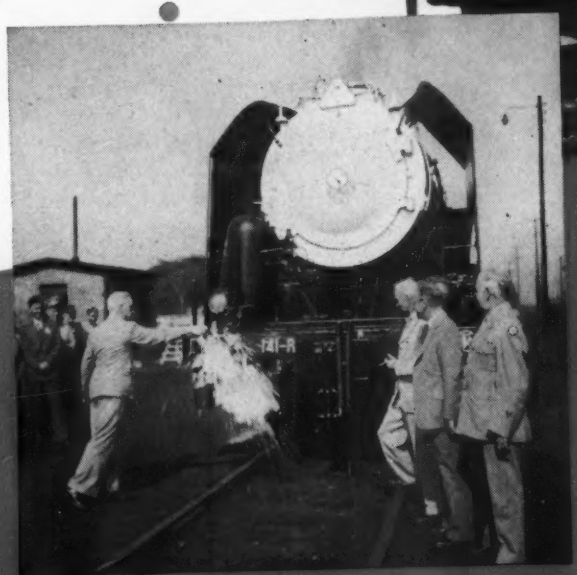
SATCO Bearing Metal

MODERN
HEAVY DUTY
BEARINGS

MAGNUS METAL CORPORATION
CHICAGO NEW YORK

First OF 260





Christening the first Baldwin 2-8-2 at Eddystone, August 30, 1945.

BALDWINS FOR FRANCE



SPECIFICATIONS

Gauge 4' 8½"	Driving wheels diam. 65"
Cylinders 23½"x28"	Weight, eng. & tend. 410,000 lbs.
Steam Pressure 220 lbs.	Tractive force 44,500 lbs.

This powerful 2-8-2 type locomotive, just out of the Baldwin shops, is a symbol of the new France which, under patriotic leadership, has risen victoriously from the trials of war.

These locomotives are headed for the tremendously important job of transporting the materials needed to return France to its place among the great industrial nations of the world.

Baldwin serves the railroads of France, as it has served those of America for more than a century, with the best in modern locomotives of all types.

BALDWIN

LOCOMOTIVES

BLW

THE BALDWIN GROUP

The Baldwin Locomotive Works, Philadelphia 42, Pa., U. S. A. Offices: Philadelphia, New York, Boston, Chicago, St. Louis, Washington, San

To Resist PRESSURE and HEAT and COLD



• That's what refinery fittings have to do. They carry hot—or cold—liquids and gases under high pressure. They must resist "creep"—hold their dimensions. They must resist corrosion.

So we make refinery fittings—manifolds, return bends and valves—of cast steel, because cast steel has the desired properties, and because these properties can be specified in advance. And cast to complex shapes.

Do your steel parts call for entirely different properties? Whatever they are, you can get them in cast steel.

Research and experience have given steel foundries plenty of modern "know how". And performance—in both war and peace—has proved the value, the versatility and the economy of steel castings.

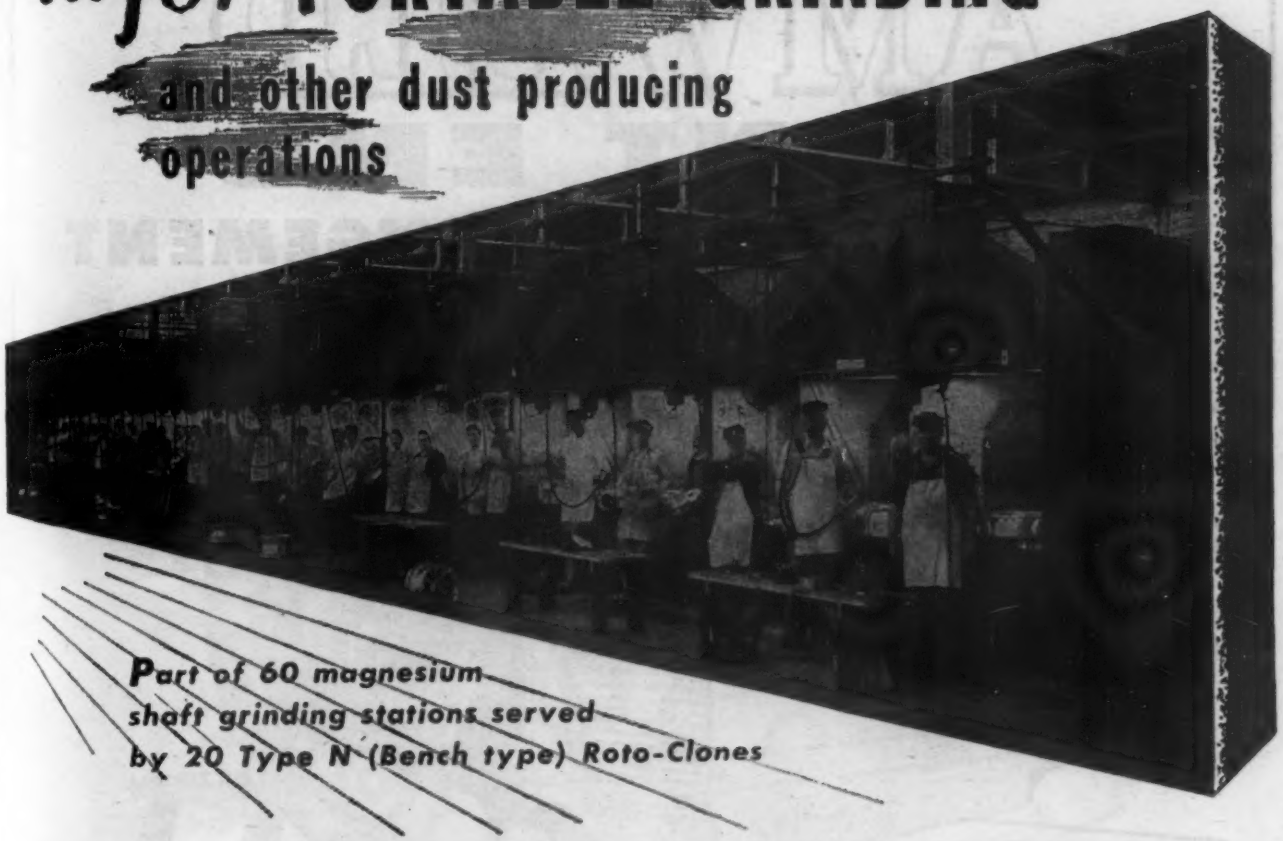
For steel parts of whatever size or shape, with mechanical properties the conditions require, consult your steel foundryman. Or write to Steel Founders' Society, 920 Midland Bldg., Cleveland, Ohio.

MODERNIZE AND IMPROVE YOUR PRODUCT WITH

STEEL CASTINGS

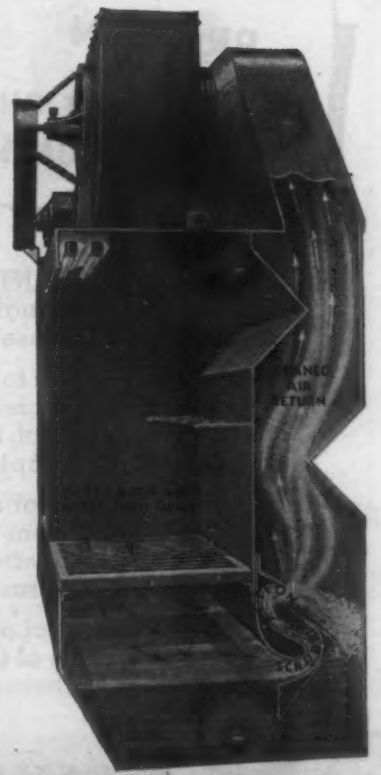
...for PORTABLE GRINDING

and other dust producing operations



Part of 60 magnesium shaft grinding stations served by 20 Type N (Bench type) Roto-Clones

Finely divided dusts produced by grinding and finishing operations on metal parts, plastics and other materials are particularly suited to collection by the Type N Roto-Clone. This wet-type dust precipitator is available in 2 forms—as a complete self-contained unit and as a ventilated bench (illustrated above). In this installation 3 grinding stations are served by each Roto-Clone—thus requiring a total of 20 dust collection units. These units exhaust an air volume of 120,000 C. F. M. which is recirculated clean to the workroom.



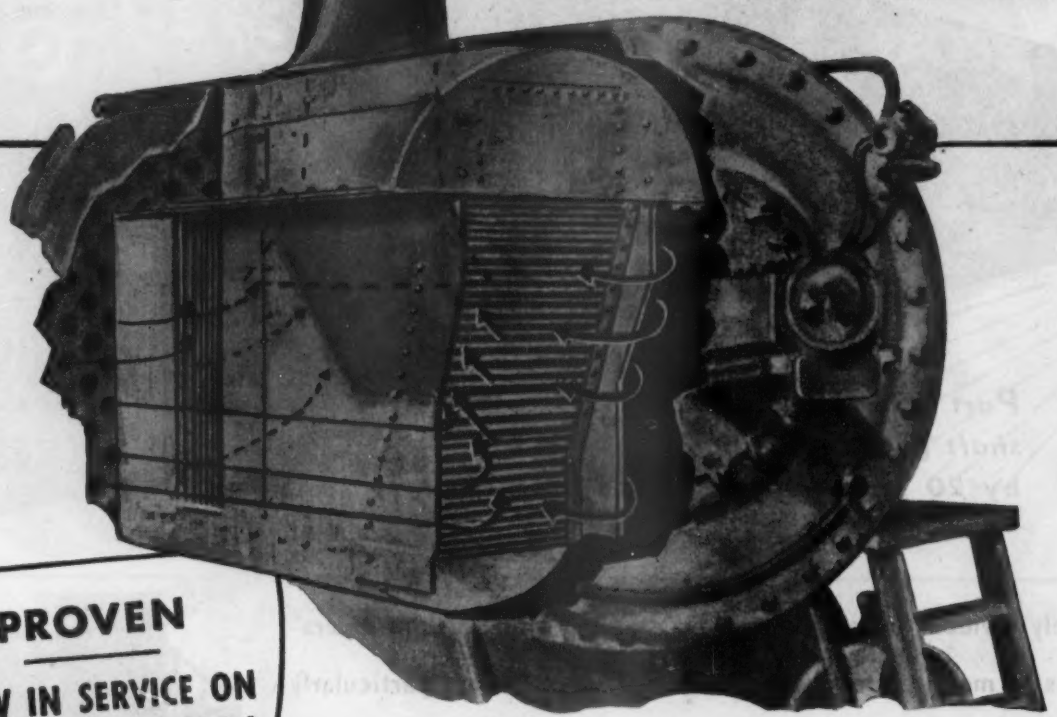
Send for Bulletin No. 277 for further information.

AMERICAN AIR FILTER CO., INC.
111 Central Avenue, Louisville 8, Kentucky
In Canada: Darling Bros., Ltd., Montreal, P. Q.

AAF

TYPE N ROTO-CLONE

AMWELD
FRONT END
ARRANGEMENT



PROVEN

NOW IN SERVICE ON SEVERAL RAILROADS

The three major factors to be considered in a locomotive front end arrangement are efficiency of operation, maintenance and the elimination of sparks.

The AMWELD FRONT END increases operating efficiency by maintaining a more equalized draft through all the flues and providing a streamlined flow of the gases which permits the use of a larger exhaust nozzle resulting in lower back pressure.

Maintenance is held to a minimum with the AMWELD FRONT END by the equalized draft resulting in a reduction in flue cutting and the incorporation of rolled steel louvers which do not become plugged or burned. The sturdy structure is designed to operate from shopping to shopping without attention.



The rolled steel louvers in the AMWELD FRONT END provide an efficient means of eliminating sparks by their arrangement in a series of inverted "V's". This design does not permit the large cinders to pass and crushes the small cinders against the back side of the "V's".

One of our engineers will gladly discuss in detail the merits and economies of the AMWELD FRONT END. Several railroads have adopted it for benefits and economies best suited to their particular operations.

RAILWAY EQUIPMENT DIVISION

THE AMERICAN WELDING & MANUFACTURING CO.

WARREN, OHIO



10 Years Operation

have TESTED and PROVED IT!

WAUKESHA

ENGINE-DRIVEN *Equipment*

In 1935, one railroad started operating one coach with Waukesha engine-driven equipment . . .

And *Railway Age* in its Sept. 14, 1935 issue carried an article about it, headed "Air Conditioning with No Locomotive Power Drag" . . .

That was in the beginning—ten years ago. Waukesha was making but one railway product then—the Waukesha Ice Engine. It supplied air conditioning only—and was used about six months in the year.

But—right from the very start—it was an exceptional success. More than 25 of America's major railways have found its advantages and savings remarkably outstanding!

Waukesha did not stop there. The same Waukesha principles were applied . . . and their application extended . . . to replace the axle-driven generator with the Waukesha Engine-Generator.

The comfort cycle is complete. Full voltage illumination by the Engine-Generator—and full car cooling capacity, both proportioned to demand by modulation —*automatically* at all times.

No parasite power drag on the locomotive! No terminal standby service required. Entirely independent of train movement, car location, or the locomotive itself!

Your new equipment plans should include the Waukesha Comfort Twins. Send for Bulletins 1114 and 1179.

REFRIGERATION DIVISION

WAUKESHA MOTOR COMPANY • WAUKESHA, WIS.

LARGEST BUILDERS OF MOBILE ENGINE-DRIVEN REFRIGERATION AND GENERATOR EQUIPMENT

Rx PRESCRIPTION for acid bite

The corrosive bite of acids is a direct threat to cable life. Acids in road ballast cinders attack buried cable, while other acids endanger roundhouse and repair shop cable service.

The choice of Okolite-Okoprene* is an effective prescription for acid bite. Cables of this durable construction are resistant not only to acids, but to alkalies, other chemicals and oil as well. Okolite gives them a moisture-resistant insulation of excellent electrical properties, Okoprene a non-flammable neoprene protective jacket. The Okonite Company, Passaic, N. J.

* U. S. Pat. No. 2,312,058

OKONITE

insulated wires and cables



Cleveland's most friendly hotel is its most convenient one, too.

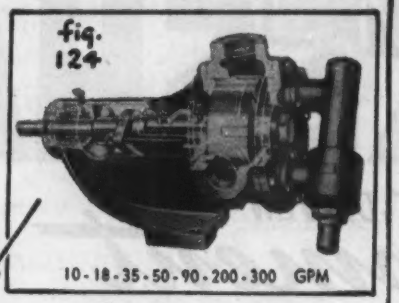
Hotel Cleveland

CLEVELAND, OHIO

Directly connected with Union Passenger Terminal

'Take A Look At The VIKING ROTARY PUMP





The Pump That OUT-SELLS ALL ROTARIES

Because of its simple design, sturdy construction and dependable, carefree service, the Viking Rotary Pump is the answer to most rotary pumping problems. Why not get the facts about Viking . . . learn what this famous pump can do for you?

Write today for Bulletin Series 2500Y which illustrates and describes Viking pumps that are giving top-notch service in the fueling of diesel driven trains. It will be sent to you FREE by return mail.

VIKING Pump COMPANY CEDAR FALLS IOWA

NEW FIFTH EDITION

LAYING OUT FOR BOILER MAKERS AND PLATE FABRICATORS

Revised by

GEORGE M. DAVIES

Boiler Designer, New York Central

THIS well-known book, first published in 1907, which has been out of print several years, has been thoroughly revised and brought up to date. The locomotive boiler chapters have been greatly expanded. Important new chapters include one on Laying Out and Computing Boiler Patches, and one on Laying Out for Welded Construction. Much additional material has been added on plate fabrication but important chapters on sheet metal layout have been left in. The book has been entirely reset in easier reading type and all the new layout drawings are sharp and clear. Written in shop language and without resort to higher mathematics. Send for descriptive circular, or for a copy of the book as soon as ready on Ten Days' approval.

530 pages, 700 illus., 9 x 12, cloth $8.00

BOOK DEPARTMENT

SIMMONS-BOARDMAN PUBLISHING CORP.

30 CHURCH STREET, NEW YORK 7, N. Y.

STATEMENT of the ownership, management, circulation, etc., required by the Acts of Congress of August 24, 1912, and March 3, 1933, of *Railway Age, published weekly at Philadelphia, Pa., for October 1, 1945.*

State of New York }
County of New York } ss.

Before me, a *Notary Public* in and for the State and county aforesaid, personally appeared *Roy V. Wright,* who, having been duly sworn according to law, deposes and says that he is the *Managing Editor* of the *Railway Age* and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wti:

1. That the names and addresses of the publisher, editor, managing editors, and business managers are:

Publisher, Simmons-Boardman Publishing Corporation, 30 Church Street, New York, N. Y.

Editor, S. O. Dunn, 105 West Adams Street, Chicago, Ill.

Managing Editor, Roy V. Wright, 30 Church Street, New York, N. Y.

Business Managers, None.

2. That the owners are: Simmons-Boardman Publishing Corporation, 30 Church Street, New York 7, N. Y.; Stockholders of 1 per cent or more of the total amount of stock are: I. R. Simmons, 15 Hillcrest Dr., Pelham Manor, N. Y.; P. A. Lee, Hopatcong, N. J.; Henry Lee, Hopatcong, N. J.; E. G. Wright, 398 N. Walnut Street, East Orange, N. J.; S. O. Dunn, 105 West Adams Street, Chicago, Ill.; C. E. Dunn, 3500 Sheridan Blvd., Chicago, Ill.; L. B. Sherman estate, Winnetka, Ill.; Mae E. Howson, 6922 Paxton Avenue, Chicago, Ill.; Spencer Trask & Company, 25 Broad Street, New York, N. Y. General Partners of Spencer Trask & Company are: Edwin M. Bulkley, 817 Fifth Avenue, New York, N. Y.; Acosta Nichols, Cold Spring Road, Oyster Bay, N. Y.; Cecil Barret, Bar Harbor, Me.; C. Everett Bacon, 16 Erwin Park, Montclair, N. J.; F. Malbone Blodget, 65 Patterson Ave., Greenwich, Conn.; Arthur G. Gilbert, 440 Park Avenue, New York, N. Y.; Henry S. Allen, 407 Highland Avenue, Orange, N. J.; William Kurt Beckers, 39 E. 79th Street, New York 16, N. Y.; Edwin M. Bulkley, Jr., 40 East 66th Street, New York 16, N. Y.; Charles F. Bryan, 83 Adams Street, Garden City, L. I., N. Y.; Harold H. Cook, 259 South Mountain Ave., Montclair, N. J.; Brittin C. Eustis, Old Chester Road, Essex Fells, N. J.; Anton Henry Rice, Jr., 1 Riverview Road, Irvington-on-Hudson, N. Y.; J. Streicher & Company, 2 Rector Street, New York 6, N. Y. Partners of J. Streicher & Company are Joseph Streicher; Ethel Streicher; and J. L. Streicher, all of 2 Rector Street, New York 6, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: *None.*

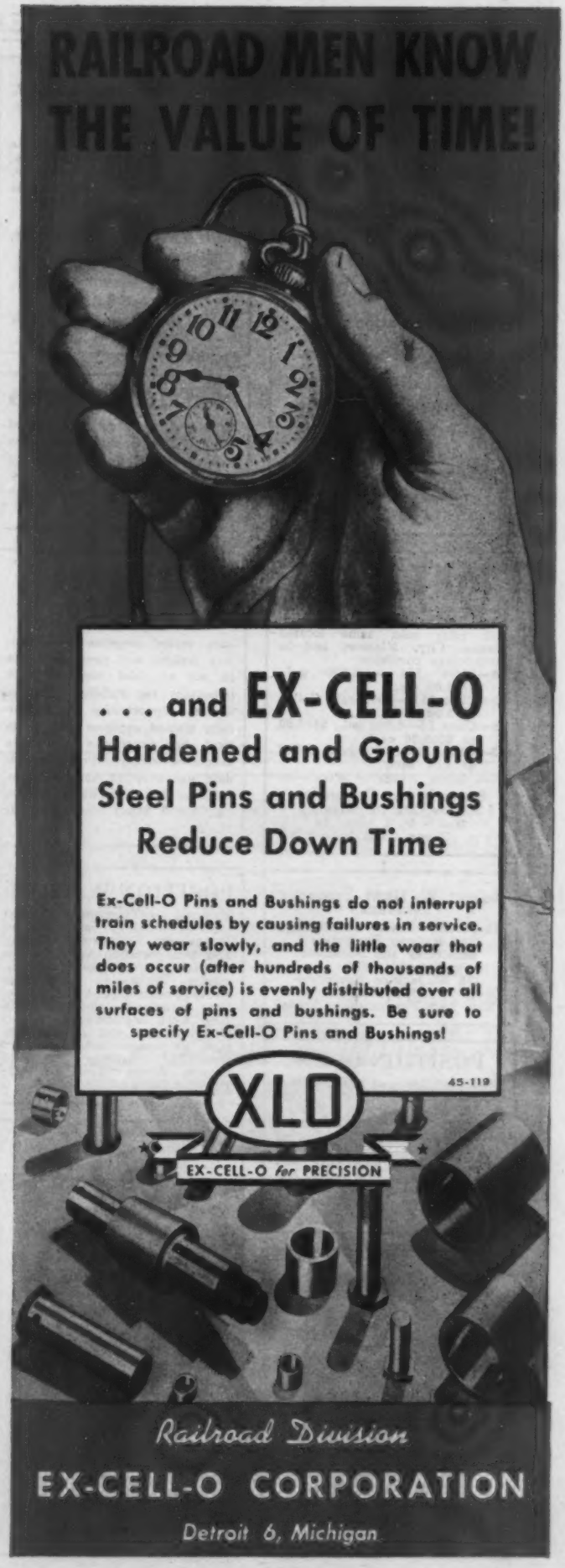
4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

ROY V. WRIGHT.

Sworn to and subscribed before me this 24th day of September, 1945.

EDMUND J. PUYDAK.

[Seal] (My commission expires March 30, 1947.)



GET TOGETHER DEPARTMENT

Educational Services

for

RAILROAD MEN

Our New Service

on

Diesel Locomotive

Operation

is highly recommended

for

Engineers and Firemen

The Railway
Educational Bureau
Omaha 2, Nebraska

2—44-Ton Westinghouse Electric 600 V. D. C., Excellent Condition, Just Overhauled

1—2 Unit, 87-Ton Westinghouse Diesel Electric Locomotive. Equipped with two 300 H.P. Westinghouse engines. Can be operated as 1 or 2 units.

IRON & STEEL PRODUCTS, Inc.
40 years' experience
13486 S. Brainard Ave.,
Chicago 33, Ill.
"ANYTHING containing IRON or STEEL"

RAILROAD EQUIPMENT

78 ton Baldwin Type 0-6-0 Switcher — Side Tank
80 ton Baldwin Type 0-6-0 Switcher — Separate Tender
110 ton American Type 0-8-0 Switchers — Separate Tenders
181 ton American Type 2-8-2 Mikados with Boosters

All of the above Locomotives in excellent condition.

Model 250 Brill Gas Electric all steel combination passenger, baggage and mail car new in 1928. Now being completely rebuilt.

Full detailed particulars with quotation on any of the above items will be gladly furnished.

THOMAS F. CAREY CO., Inc.
120 LIBERTY STREET
New York 6, New York

TANK CARS

For quick sale and prompt delivery will sell the following subject prior sale, same located Kansas City, Missouri and in interchange condition:

8—Class III — 8,000 gal., $725.00 each
3—Class III—8,000 gal., Coiled $775.00 each
28—Class II—8,000 gal., $575.00 to $625.00 each
2—Class II—8,000 gal., Coiled $675.00 each

—— *Write, Phone or Wire* ——

Brown-Strauss Corporation
Kansas City 10, Missouri
Mail - P. O. Box 78
Phone - LD 169

POSITION WANTED

Group of the best experienced track men with camp equipment looking for steady job. Will go anywhere. Address Box 754, RAILWAY AGE, 30 Church Street, New York 7, N. Y.

DESIGNER WANTED

with recent experience on railway freight and passenger cars to act as chief engineer with important car building shop in China. Opportunity for technically trained engineer with practical shop experience as well as executive ability. Prefer candidate not over 45 years of age. Address Box 762, Railway Age, 30 Church Street, New York 7, N. Y.

---

50 TON ALL STEEL BOX CARS

25—50 ton all steel box cars. New 1929. U section cast steel side frames. Duryea cushioned underframes. Fully lined. Inside length 40' 6". Capacity 3548 cu. ft. Excellent condition.

THOMAS F. CAREY CO., INC.
120 Liberty Street
New York 6, N. Y.
Telephone Barclay 7-1770

Robert W. Hunt Company
ENGINEERS
Inspection—Tests—Consultation
All Railway Equipment
Structures and Materials
General Office:
175 W. Jackson Boulevard
CHICAGO
New York-Pittsburgh-St. Louis

POSITION WANTED

Railroad — Transportation Executive — Sales Promotion and Negotiation. Former railroad man and transportation sales and industrial engineer, now rail and marine Purchasing Agent for Army Transportation Corps, desires permanent connection with New York organization. Excellent executive and general contacts in transportation industry. Box 765, Railway Age, 30 Church Street, New York 7, N. Y.

FREIGHT CARS FOR EVERY NEED!

Now Only Half of Recent Peak Prices—
As Low As $500

15, Gondolas, 50-Ton, All Steel
7, Hopper, Twin, 50-Ton
80, Hopper, Side Discharge, 50-Ton
10, Refrigerator, 40-Ft., 40-Ton
10, Box, 40-Ft., 40-Ton
7, Box, Automobile, Steel, 50-Ft., 50-Ton
6, Dump, Magor, 30-Yd., 50-Ton; Lift Door
1, Dump, Clark, Automatic, 30-Yd., 50 Ton; Drop Door
4, Dump, K & J Automatic, Lift Door; 37-Yd., 50-Ton
20, Dump, Koppel, Automatic, 20-Yd., 40-Ton; Lift Doors
10, Dump, K & J Automatic Lift Door; 20-Yd., 50-Ton
2, Dump, K & J, Lift Door, 37-Yd., 50-Ton
25, Tank, 8000-Gallon, 40-Ton Trucks
300, Tank, 10,000-Gallon, 50-Ton Trucks

All cars are priced to sell!

IRON & STEEL PRODUCTS, INC.
40 years' experience
13486 S. Brainard Ave. **Chicago 33, Illinois**
"ANYTHING containing IRON or STEEL"

POSITION OPEN

NORTHERN INDIANA MANUFACTURER has exceptional opportunity for a railroad seating engineer. Familiarity with railroad passenger and sleeping car body and trim engineering required. State experience and salary desired in first letter. Address Box 766, Railway Age, 30 Church Street, New York 7, N. Y.

MANUFACTURERS' REPRESENTATIVE

ENGINEER with wide experience in Transportation field and an established office in Philadelphia will supply high grade representation for reputable manufactures.

Reply Box 764, Railway Age, 30 Church Street, New York 7, N. Y.



Your old newspapers can help speed the return of the nation to peacetime pursuits— ***if you make sure they're collected.***

Take

Advantage

of Space

in this

Section



This Stands for Honorable Service to Our Country



Respect its wearer, whoever he or she may be, for it represents an honorable discharge from the armed forces of the United States . . . *for a job well done.*

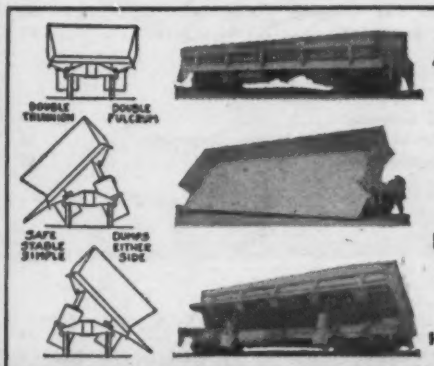
DULIEN BUYS **DULIEN** SELLS **DULIEN** LIQUIDATES
RAILROAD EQUIPMENT & ACCESSORIES

Available for IMMEDIATE DELIVERY

3 American Saddle Tank Locomotives
1—94 Ton SUPERHEATED 1—84 Ton
1—83 Ton

Subject to Prior Sale

DULIEN STEEL PRODUCTS, Inc.
OF WASHINGTON
1008 Western Ave.
SEATTLE 4, WASH.
OF NEW YORK
2280 Woolworth Bldg.
NEW YORK 7, N. Y.

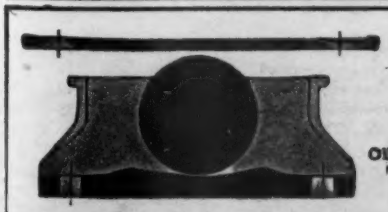


AIR DUMP CARS

RAIL CARS
MINE CARS
AND
LOCOMOTIVES
AXLESS TRAINS
COMPLETE
HAULAGE SYSTEMS

DIFFERENTIAL STEEL CAR CO.
FINDLAY, OHIO

GOLD
VAPOR-STEAM-ELECTRIC
CAR HEATING SPECIALTIES
GOLD CAR HEATING & LIGHTING CO.
NEW YORK



STUCKI SIDE BEARINGS
Manufactured by
A. Stucki Co.
Oliver Bldg., Pittsburgh, Pa.
Canadian Representatives
The Holden Co., Ltd.
Montreal, Can.

RAILROAD EQUIPMENT
CARS—LOCOMOTIVES
REPAIR PARTS

RELAYING RAILS

STEEL STORAGE TANKS
6000 — 8000 — 10000 gal. cap.
CLEANED AND TESTED

THE PURDY COMPANY
122 S. Michigan Avenue Chicago 3, Illinois

Index to Advertisers

October 13, 1945

A

Aluminum Company of America 12, 13
American Air Filter Co., Inc. 55
American Arch Company, Inc. 47
American Locomotive Company 6, 7
American Steel Foundries 33
American Welding & Manufacturing Co., The, Railway Equipment Division 56

B

Baker Industrial Truck Division of The Baker-Roulang Company 35
Baldwin Locomotive Works, The 52, 53
Bethlehem Steel Company 3
Brown-Strauss Corporation 60

C

Carey Co., Inc., Thomas F. 60
Caterpillar Tractor Co. 32
Classified Advertisements 60
Cummins Engine Company, Inc. 38

D

Differential Steel Car Company 61
Dulien Steel Products, Inc. 61

E

Edgewater Steel Company 8, 9
Electro-Motive Division, General Motors Corporation 44
Ex-Cell-O Corporation 59

F

Franklin Railway Supply Company, Inc. 46

G

Galvin Mfg. Corp. 39
General Electric Company 6, 7
General Railway Signal Company ..... Back Cover
Get Together Department 60
Gold Car Heating & Lighting Co. 61
Goodall Fabrics, Inc. (Division of Goodall-Sanford, Inc.) 16, 17
Gould Storage Battery Corporation 36
Graybar Electric Company 27
Gustin-Bacon Mfg. Company 18

H

Heywood-Wakefield 19
Hotel Cleveland 58
Hunt Company, Robert W. 60
Hunt-Spiller Mfg. Corporation 49
Hyatt Bearings Division, General Motors Corporation 5

I

Iron and Steel Products, Inc. 60

L

Lima Locomotive Works, Incorporated 45

M

Magnus Metal Corporation 51
Mahon Company, The R. C. 10
Merritt-Chapman & Scott Corporation 50
Minneapolis & St. Louis Railway, The 4
Morton Manufacturing Co. 26

N

National Malleable and Steel Castings Co. 22

O

Ohio Locomotive Crane Co., The 60
Okonite Company, The 58
Otis Elevator Company 20

P

Purdy Company, The 61

R

Railway Educational Bureau, The 60
Remington-Rand, Systems Division 34
Republic Steel Corporation 21
Reynolds Metals Company 28, 29

S

Schaefer Equipment Company 13
Simmons-Boardman Publishing Corp. 58, 59
Standard Steel Spring Company 37
Steel Founders' Society 54
Stucki Co., A. 61
Superheater Company, The 48
Sylvania Electric Products, Inc. 23
Symington-Gould Corporation, The 63

T

Teletype Corporation 31

U

Union Switch & Signal Company 42
Unit Truck Corporation 2
United States Plywood Corporation 30
United States Rubber Company 14
United States Steel Supply Company 11

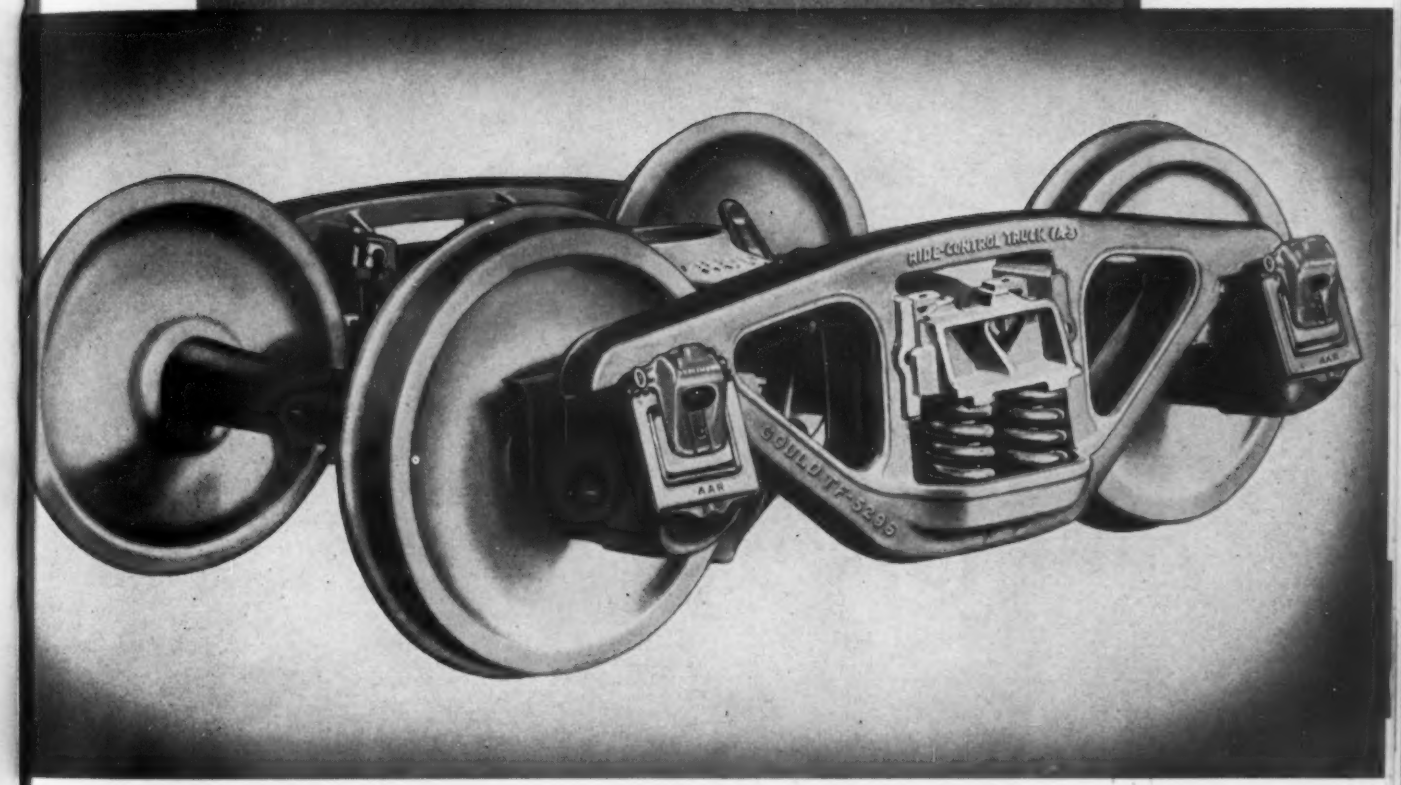
V

Viking Pump Company 58

W

Waukesha Motor Company 57
Western Electric Company, Incorporated 31
Westinghouse Air Brake Company 40
Westinghouse Electric Corporation 24, 25
Wine Railway Appliance Co., The ..... Front Cover

Ride-Control TRUCK (A-3)



- Constant frictional resistance on both compression and release controls vertical and lateral movement of bolster.
- Constant frictional resistance prevents harmonic oscillation yet permits highest utilization of coil spring shock absorption.
- Simple assembly . . . no spring plates . . . no spring planks.

A TRUCK FOR SMOOTH, SAFE OPERATION AT ALL SPEEDS

THE SYMINGTON-GOULD CORPORATION

Works ROCHESTER & DEPEW, NEW YORK

New York • Chicago • St. Louis • Baltimore • Boston • San Francisco • In Canada: ADANAC SUPPLIES, LTD., Montreal, Que.



Speed your deliveries

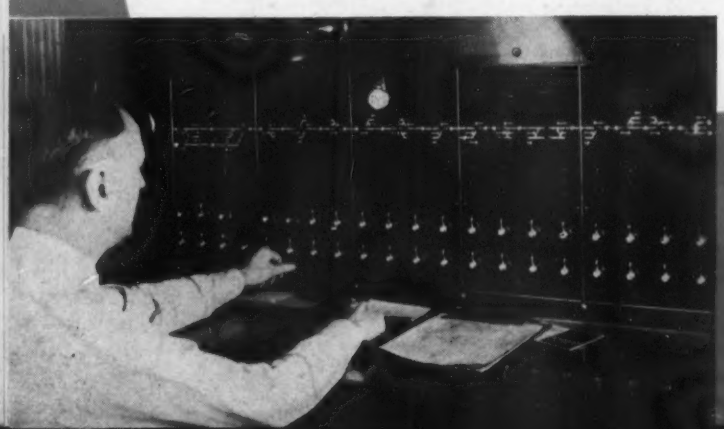
to meet the competition of THE FUTURE



with G-R-S CENTRALIZED TRAFFIC CONTROL!

G-R-S Centralized Traffic Control can play a big part in helping your road to meet the growing demand for faster deliveries. The following chart gives an example of what five railroads have realized from the installation of G-R-S Centralized Traffic Control.

Railroad	Avg. Freight Train Speed (m.p.h.)			Avg. Time Per Freight Trip (minutes)				Minutes Saved Per Freight Train-mile
	Before CTC	After CTC	% Speed increase with CTC	Before CTC	After CTC	Saved with CTC	% of Time Saved with CTC	
A	8.7	11.8	35.6%	276.0	204.0	72.0	26.0%	1.76
B	12.9	18.0	39.5%	42.0	30.0	12.0	28.6%	1.33
C	15.8	21.5	36.1%	120.0	88.4	31.6	26.3%	1.00
D	13.7	20.2	47.5%	184.2	124.8	59.4	32.2%	1.41
E	14.4	19.3	34.0%	507.0	380.0	127.0	25.0%	1.04



Ask for a study! Let us give you an estimate of what G-R-S CTC can do for you! No obligation—just write or call our nearest District Office.

GENERAL

RAILWAY SIGNAL COMPANY

Rochester 2, N. Y.

New York Chicago St. Louis